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The Criollo Horse

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An incorporated organization devoted to promoting a knowledge of the laws of heredity and their application to the improvement of plants, animals, and human racial stocks

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The

Journal of Heredity

Vol. XXI NOVEMBER, 1930 No. 11

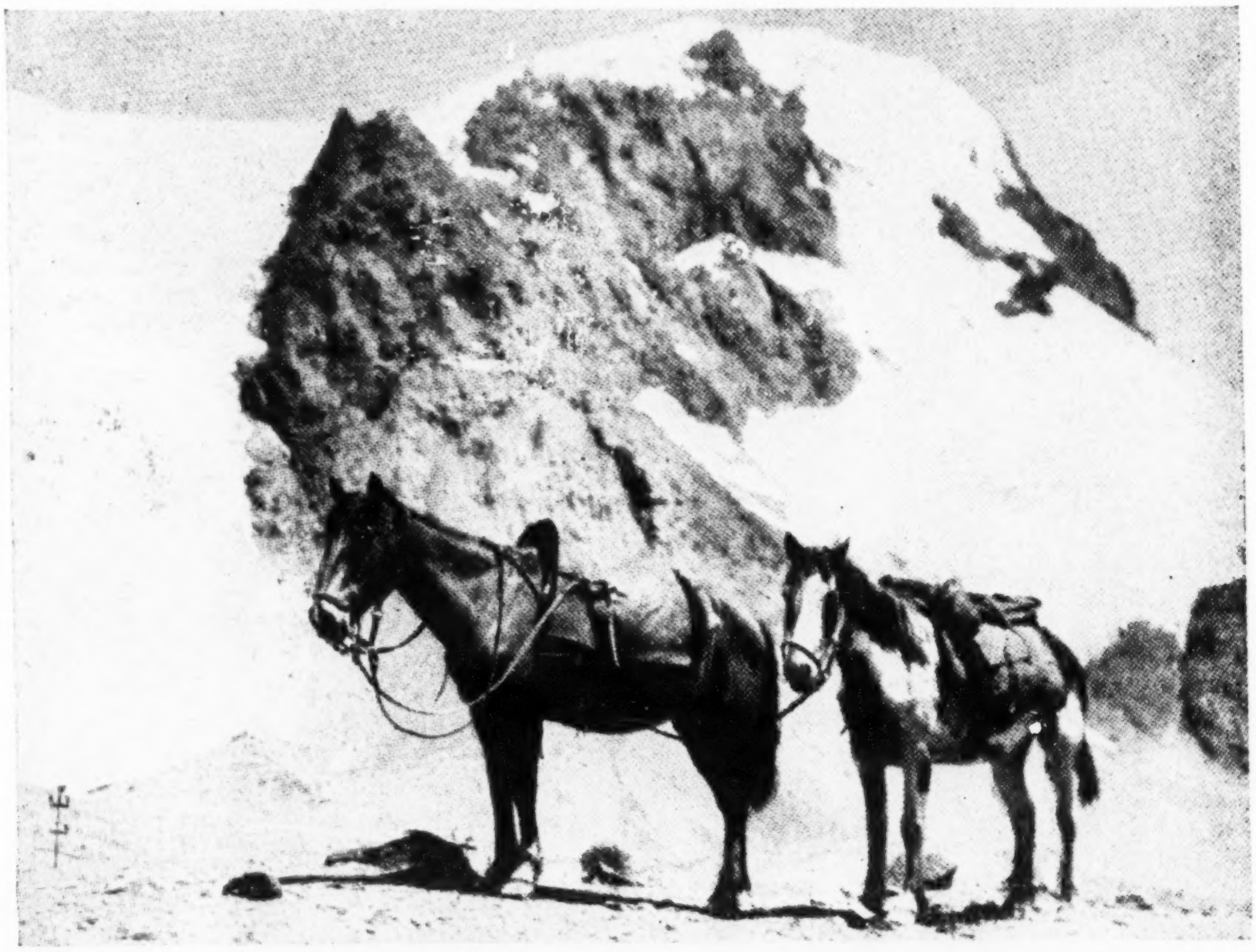
This Issue Devoted to

The Criollo Horse of South America

BY EMILIO SOLANET

Translation and Notes

BY THORNTON CHARD



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COWBOYS OF THE PAMPAS

Frontispiece

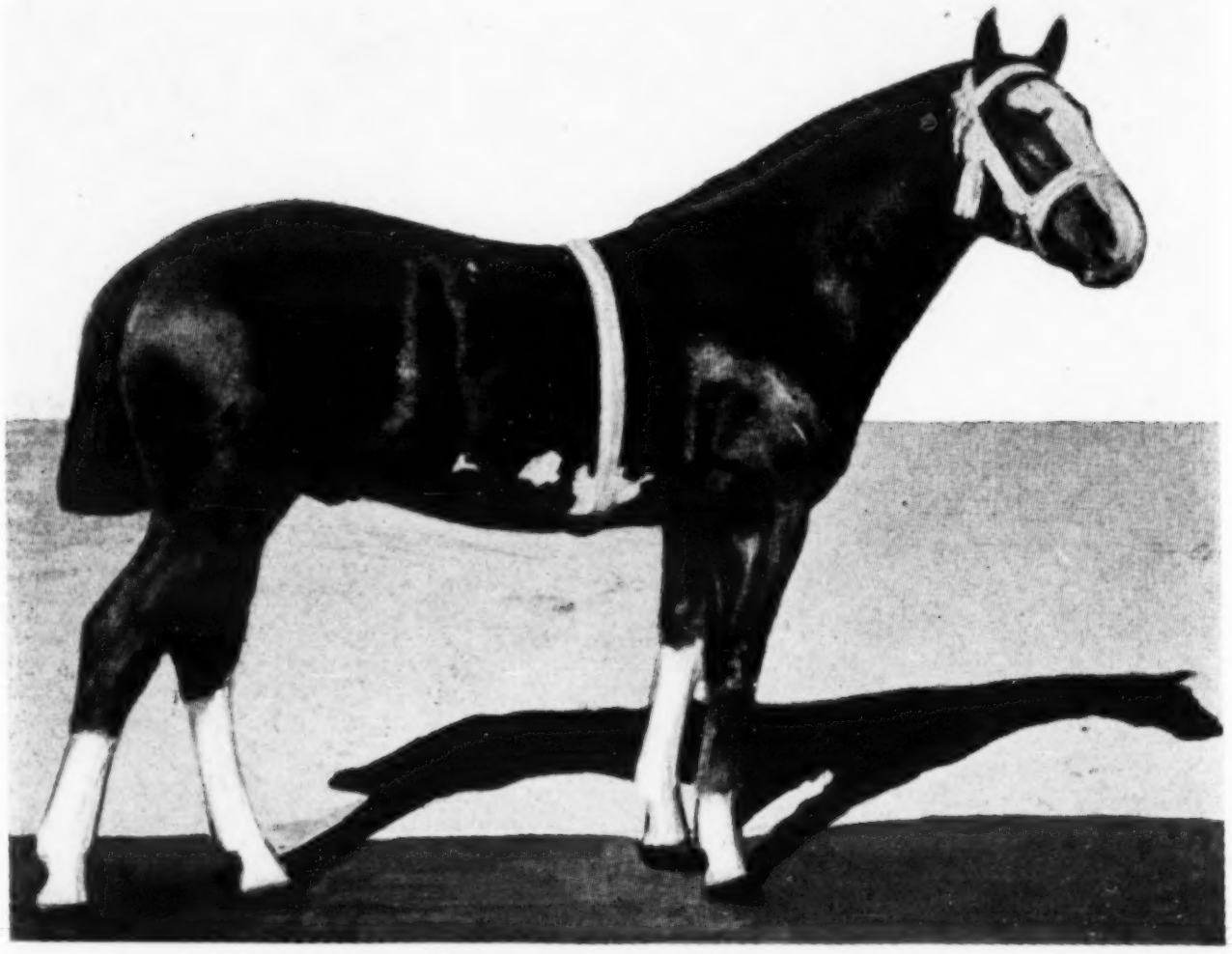
Types of cowboys (Ranch Owner and Peon) and their Criollo horses. From a painting by P. P. Pueyrredón, Buenos Aires, 1864. (Frontispiece of "El Caballo Criollo" by Dr. Emilio Solanet, through the courtesy of Dr. Máximo Castro.)

THE CRIOLLO HORSE*

EMILIO SOLANET

Translated from the Spanish under the direction of

THORNTON CHARD



A CHAMPION "CRIOLLO"

Figure 1

Pure Criollo "Olvido Cardal" A. S. B.† 85 (dam Mangrulla A. S. B. 0217. Sire Mangrullo). Dark Chestnut. Height 1.45M (14 h. 1″) Heart girth 1.78M (70.07″) Bred by Pedro and Emilio Solanet at Haras "El Cardal," Argentine. This is an inbred horse his dam having been also the dam of his sire; his dam a product, since 1887, of selective breeding. For centuries prior to this his ancestors were self-bred in a wild state subject to the privations and severe climatic conditions of life on the Argentine "pampas." This survival through severe natural selection has endowed his race with muscular strength, endurance and mental alertness, and unexcelled stamina of all organs of the body. He is a direct and pure descendant of the Spanish horses brought to the Argentine by the Spaniards during the Conquest period over four hundred years ago. These Spanish horses were largely of Arabian and Barb blood.

This horse is pictured here in show ring condition, as in the Argentine National Exhibition of 1922 he won the championship.

Translator's Note: Dr. Solanet is a Veterinarian of renown "who has made a life study of horse flesh." He is a scientific and successful breeder, an authority on the "Criollo" the best strains of which he has the reputation of possessing, on his large estate, "El Cardal," in the Argentine. It was he who presented Mr. A. F. Tschiffely with the "Criollos" Mancha and Gato, thereby making it possible for Mr. Tschiffely to undertake and successfully complete the very remarkable ride, requiring 900 days, from Buenos Aires to Washington.

Through the kind offices of Mr. Tschiffely, I am privileged to publish the paper of Dr. Solanet, whose great

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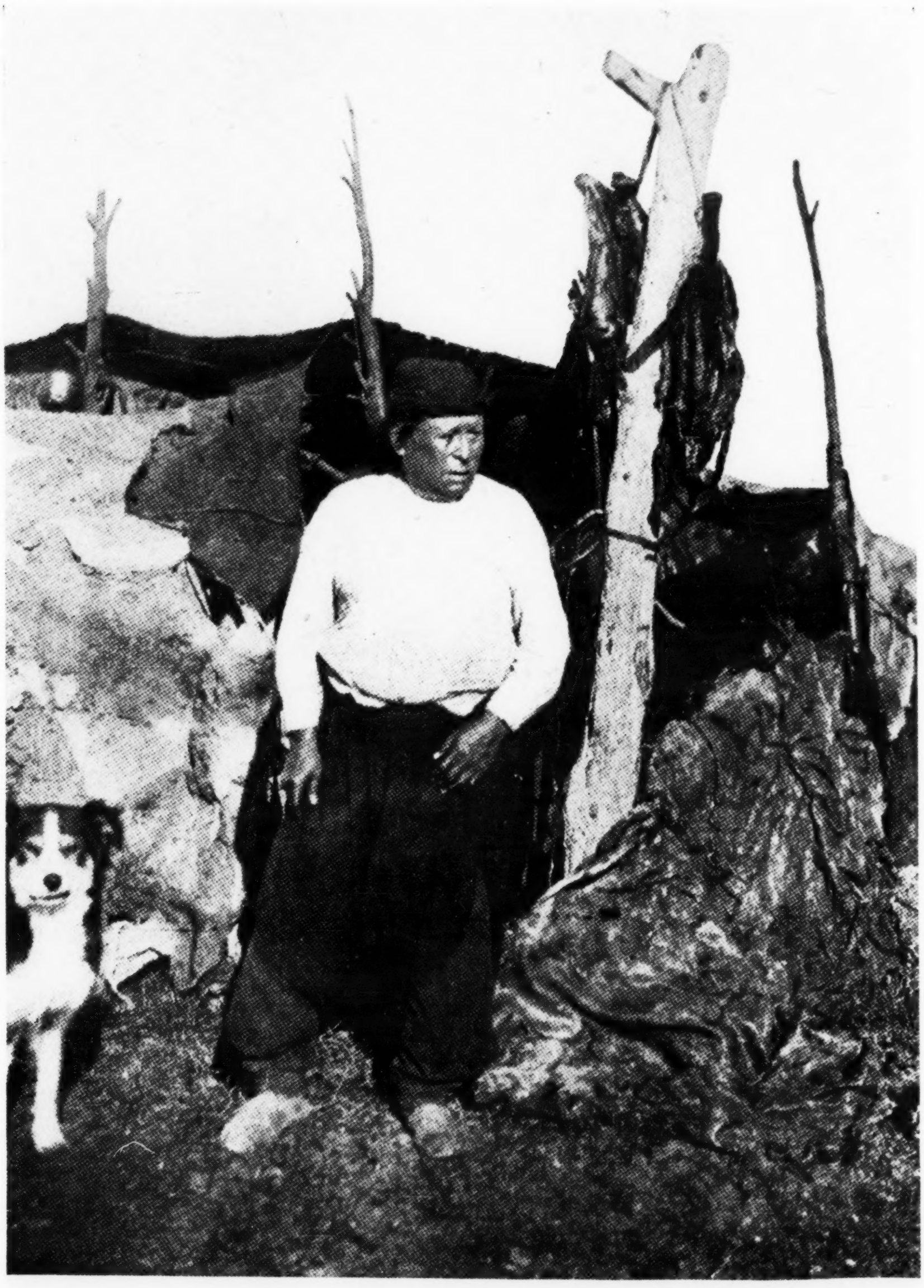
*El Caballo Criollo Conferencia Leída en la Facultad de Agronomia y Veterinaria de Buenos Aires el 23 de Septiembre de 1923 por el Dr. Emilio Solanet. Imprenta "Gadola." Rivadavia 775—Buenos Aires. 1923.

†Argentine stud book.



A HORSE BREEDER OF THE PAMPAS

Figure 2

"Liempichún," an Indian chief, owner of the famous Argentine native studs, from which Señor Solanet selected the animals for his stud. The photo shows the Chief in front of his "toldo" (tent) wearing the usual "chiripá" (wide trousers) of the "pampas."

courtesy is herewith acknowledged. The paper was originally presented at a conference held by the Faculty of Veterinary Science and Agronomy of Buenos Aires, September 23, 1923. It has been freely translated from the Spanish under my direction and I have added extensive notes in an appendix.

All the "Criollo" illustrations are used through the courtesy of Dr. Solanet. For all other illustrations and for all notes I alone am responsible.

One of my objects in translating this interesting paper is to bring once again to the attention of American breeders and horsemen, especially those officers of the Army who are influential in the remount problem, the value of the Arabian and Barb blood which was the foundation of the North American pure mustang, unfortunately now lost to the United States through short-sighted lack of appreciation of its great value, as a native base on which to build an Army remount supply. (*See* JOURNAL OF HEREDITY, *Vol. 17, No. 10, p. 353.*)

South America, especially the Argentine, through the patriotic action of some of her citizens has saved her native horse.—T. C.

I. Origin

THAT the Spanish horse is the origin of the Criollo is proved by all evidence.

Paleontology

Naturalists have described the South American horse fossils. Osteology shows that they are far from the modern horse; the missing link has not been found (*1*).*

Early Language

No vocabulary of any early American language existed for describing the modern horse. Therefore they did not have this animal.

The Indians made up words such as "good thing" to describe the horse but never a real specific name. They had words for all other animals that they possessed but for the horse they made up descriptive combinations.

History of the Conquest

The conquerors found huts made of many animal skins except those of horses;—also they found that the Indians were great walkers and runners showing that they did not know the horse. No pictorial or sculptural art shows the [modern] horse.

Food products such as vegetables, fish and small animals were used but no large animal meat is mentioned.

No historian has ever mentioned evidence of the horse before the time of the Conquerors.

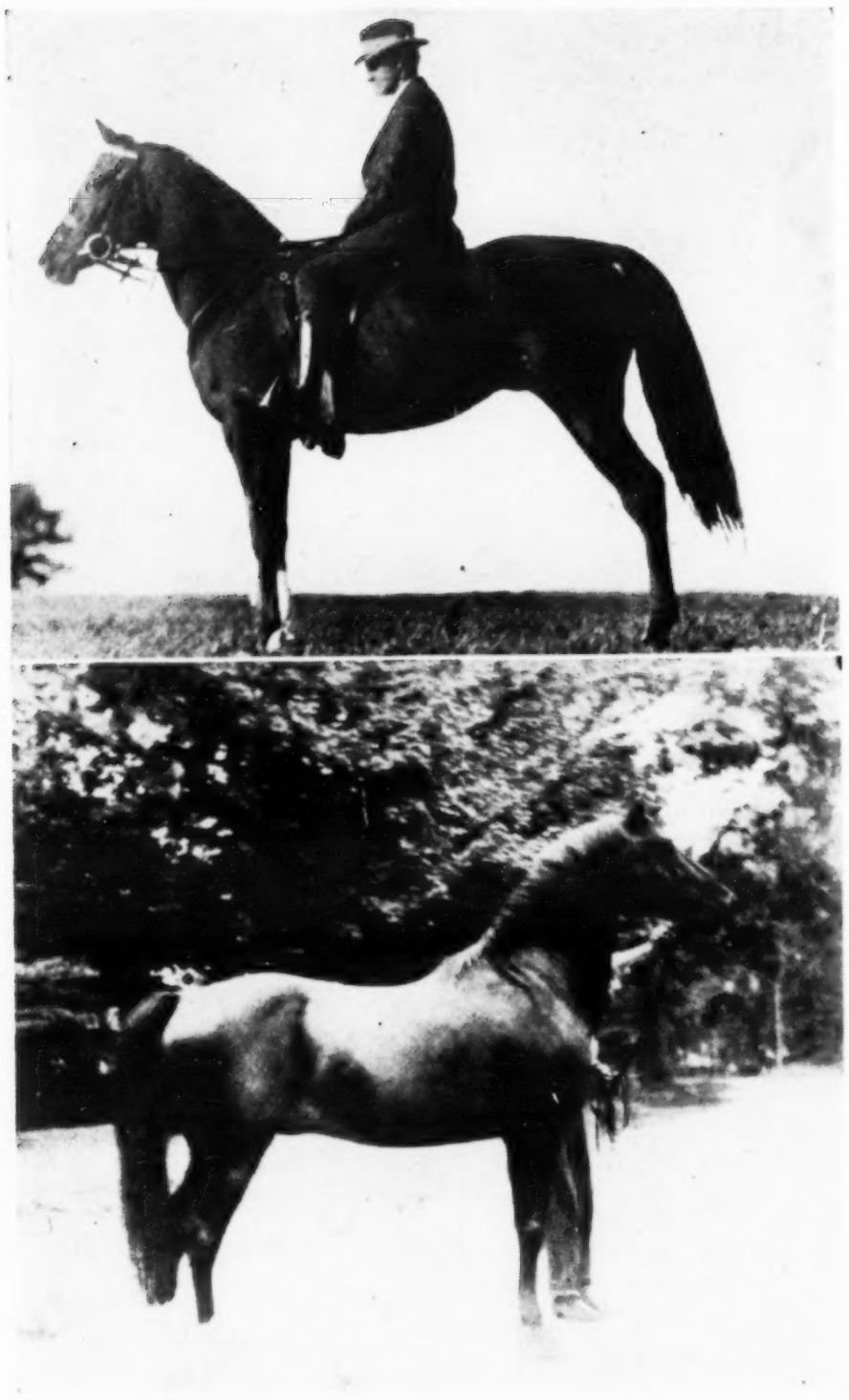
Domestication of horses is a constant fact wherever man and horse cohabit (*2*). Therefore the admiration and surprise of the Indians caused by the mounted men and the fact that they considered mounted men supernatural beings,—believing man and horse were one being,—show that they had never before seen the horse (*3-4-5*).

Conformation of the Race

The external forms which I have noted in the two types which comprise all the Criollos of Uruguay, Argentine, Paraguay and Chile coincide with the dominant races in Spain up to the year 1500, that is, they may be the African or Asiatic types brought by the Moors and placed on the peninsula during their long reign. Modifications of these races still appear quite perceptible in the Criollo especially in the cephalic characters. These are the most permanent, being least subject to change.

*Italic numerals in parenthesis refer to the notes at the end of the article.

II. Forming and Perfecting the Criollo Race



THE ARABIAN TYPE

Figure 3

Above: Pure Arabian Rodan, C. St. (A. S. B.† 258) at three years of age 15 h. 1½" (1.56 M.) A Kehilan-Ajuz, bred by Crabbet Arabian Stud, Sussex, England. Imported in utero by the late Spencer Borden and owned by the U. S. Remount Service (Dam Rose of Sharon. Sire Harb G. S. B.). From a photograph, reproduced by courtesy of Maj. C. A. Benton.

Below: Pure Arabian "Anazeh" A. S. B. 235. Dead. (Dam Naomi A. S. B. 230. Managhi-Hedruj. Sire Leopard A. S. B. 233. Seglawi-Jedran) at twelve years of age. Color red chestnut. Height 15½ hands (1.575 M). Bred by the late Randolph Huntington at Oyster Bay, N. Y. A product of centuries of selective breeding under man's supervision, for a specific use; namely: to carry a man on its back long distances over desert recions on scanty rations, little water and that only at long intervals, sometimes as long as two days; to withs'and, within 24 hours, the extremes of heat and cold without shelter; to be quick in mental and physical action, swift in speed, willing, docile and courageous. The ancestors of this horse, pictured here in show condition, thrived subject to the above conditions. The reason why this individual horse is above the average pure Arabian in height is that his dam was of the family of the tallest Arabians and that he was raised on the fat of the land from birth.

This picture is shown because most of the important breeds of horses, including the Criollo, throughout the world are indebted for their spirit and stamina to the Arabian blood. However, through an article in an Argentine Journal (Anales de la Asociación Criadores de Criollo, Buenos Aires, Sept. 1929 p. 40) I feel bound to emphasize the suggestion that the excellent points of the Criollo and of the Mustang are due to the hardiness acquired by four hundred years of natural selection, quite as much as to the inheritance of Arabian and Barb blood.—*T. C.* From a photograph given to T. C. by the late Randolph Huntington.

†Arabian Stud Book.

During the years of discovery of America,—also before and after,—the Spanish horse was considered the best horse of Europe for saddle work. The Arabian and the Barb bloods were considered stronger in their impregnation than those of the Goths, Vandals, Romans and Gauls, etc.; by reason of their greater purity and selective breeding (*6-7-8-9*).

The first horses were brought to the La Plata River. Only the best were brought to meet the difficult conditions.

The process of natural selection worked to form the race of Criollos. Poor digestion, weak heart, could not survive the dry seasons; poor lungs could not withstand the varying temperatures; lack of speed exterminated the slow.

The long marches during many months at the time of the War of Emancipation were recorded in kilometers; 100 to 200 (62-124 miles) and even more were customary on the rides. Instead of being pampered, the horses endured hardships such as being burned by the sand-laden wind and eating thistles and coarse straw.

The Criollos were valuable elements in the fight for independence, in war, agriculture and industry. On their robust backs our fathers amassed the wealth of the country.

THE BARB TYPE

Figure 4

Pure Barb Linden Tree (A. S. B. 234) G. St. Dead. Bred by the Sultan Abdul Hamid II and given by him to Gen. U. S. Grant in 1879.

"True Barbs are the produce of a cross between the Kehilan ("Arabic equivalent for Thoroughbred") of the Arab invasions of the Seventh Century and the indigenous Mauretanian breed"—Blunt' P. 413.

The renown of the Spanish horse has been attributed largely, directly to the Barb, owing to the proximity of the Moors—whose horse he was—to Spain and to the fact that the invasion of Spain by the Mussulmans was by way of the country of the Moors; but it should be remembered that the Moors had already been conquered by the Mussulmans' generals from Damascus, which place, and later Bagdad, were the capitals of the Caliph who for years appointed all governors of the conquered Spanish territory, so that there was at all times direct transaction with Arabia and opportunity for horses from Arabia to be brought to Spain. Dr. Solanet directs attention to the two types, Arabian and Barb, found in the Criollo.

After a drawing by H. S. Kittredge, copyright, 1880, by Randolph Huntington. Copyright by the Century Company and reproduced by courtesy of the Century Magazine.

III. Decadence In the Country of the Saddle Horse (From 1850 on)

After three centuries, which were years of natural selection for the horse, decadence set in. First on the ranches near Buenos Aires and then in all the zones of the country reached by the mixed breeding.

The introduction of European reproducers to improve the herds of cattle and sheep, during the middle of the last century, although it has resulted since then in the growth of our peculiar industry, has disturbed the standard of the ranchers in regard to the value of the national breeding. Without denying that the results may be contrary, with very few exceptions, the ranchers believed that to mix the blood, whatever the kind of animal so treated, was to progress (*10*).

Partly on account of this and greatly for the love of horseracing, crossing of the strong characteristics of the native Criollo with the thoroughbred race horse was an obsession, not only among the owners but even down to the stud grooms.

I repeat, that, what in other species constitutes an excellent zootechnical

HERD OF "GATEADAS" (STRIPED DUN) DAMS AT "EL CARDAL" NURSERY
Figure 5

The height of the native (pure bred); "——from 1.37 M (13 h. 2″) to 1.50 M (14 h. 3″); from 1.50 M (14 h. 3″) up there is suspicion of mixture; more than 1.55 M (15 h. 1″) definitely mixed." See Note *14*. The averages are given below.*

The averaged height of the mares in this table is 1.46 M (14 h. 1⅜″) which is not much under the height (1.48 M) (14.2″) of the famous English thoroughbred Flying Childers who "according to trustworthy statistics was the fastest horse that ever ran at Newmarket, while it is stated, on what appears to be good authority, that no faster horse has ever lived." (The Horse in History," Basil Tozer pp. 168-9).

"The vertical height of the Arabian horse at the withers—ranges from 14.1 to 15.1 English hands [144-155 cm] with an occasional individual above or below." (Brown,[7] p. 62)

The average heart girth in table below is 1.78 M (70.70″); the maximum is 1.86 M (73.22″). These measurements are greater than those of the Arabian, known to equal the hearth girth "of horses of much larger frame and varying from 1.69 M (66½″) to 1.78 M (70″)." (Brown[7]).

Dr. Solanet informs me that practically 100% of pure bred Criollo mares are fertile.—*T. C.*

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method by the rapidity with which it increases and betters the production of meat, wool, etc., in the breeding of the Criollo horse gave negative results. In effect we replace an excellent, balanced animal, which has arrived at its position after a broad natural selection, by a product of artificial selection in which appear more of the externals of conformation and speed, than the good working of the motor, in view of the work for which it is destined.

The mixing continued for fifty years, giving as a result an enormous majority of cross breds, becoming more infused with Thoroughbred blood,—which was the case around Buenos Aires,—and which finally convinced the ranchers that they had no more good saddle horses. The excessive delicacy of the cross bred racer (*11*), used for the peon work principally, the rapidity with which he broke down, the torpidity of his action on rough ground, his lack of resistance to the blasts of the hard winters and many other reasons no less important for a good motor saddle horse, show what a vacuum the loss of

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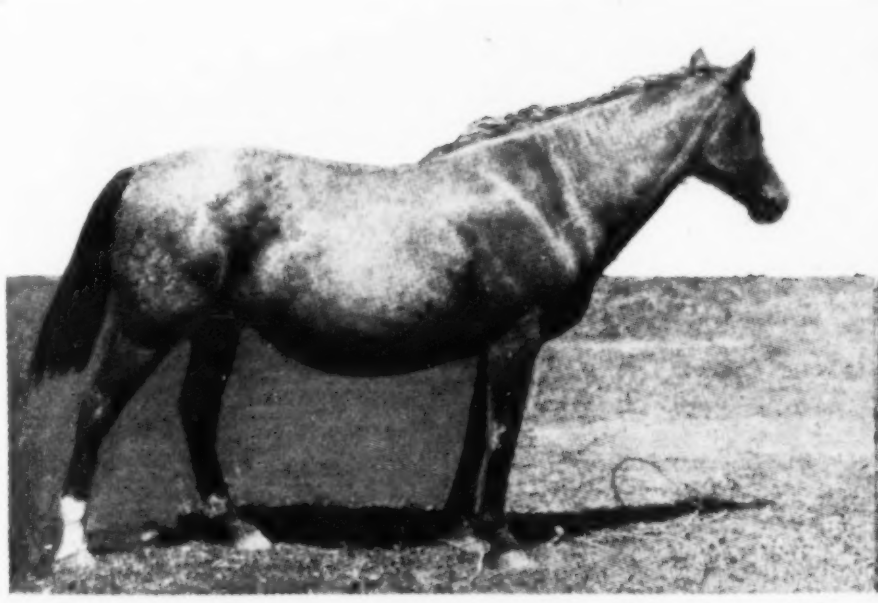
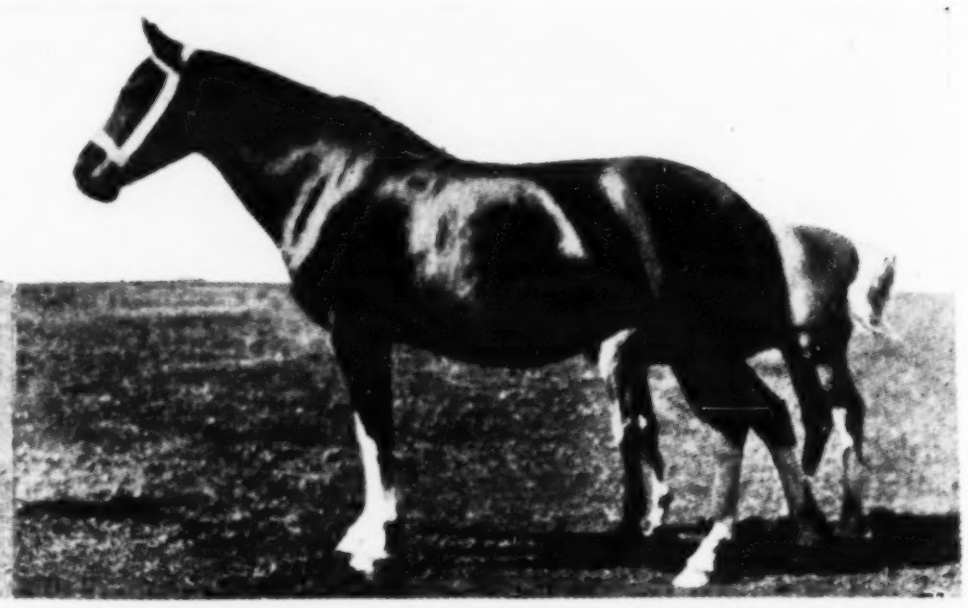
*Height	Average	1.46 M (14 h. 1⅜″)	Heart Girth	Average	1.78 M (70.70″)
	Minimum	1.40 M (13 h. 3⅛″)		Minimum	1.70 M (66.92″)
	Maximum	1.52 M (14 h. 3⅞″)		Maximum	1.86 M (73.22″)

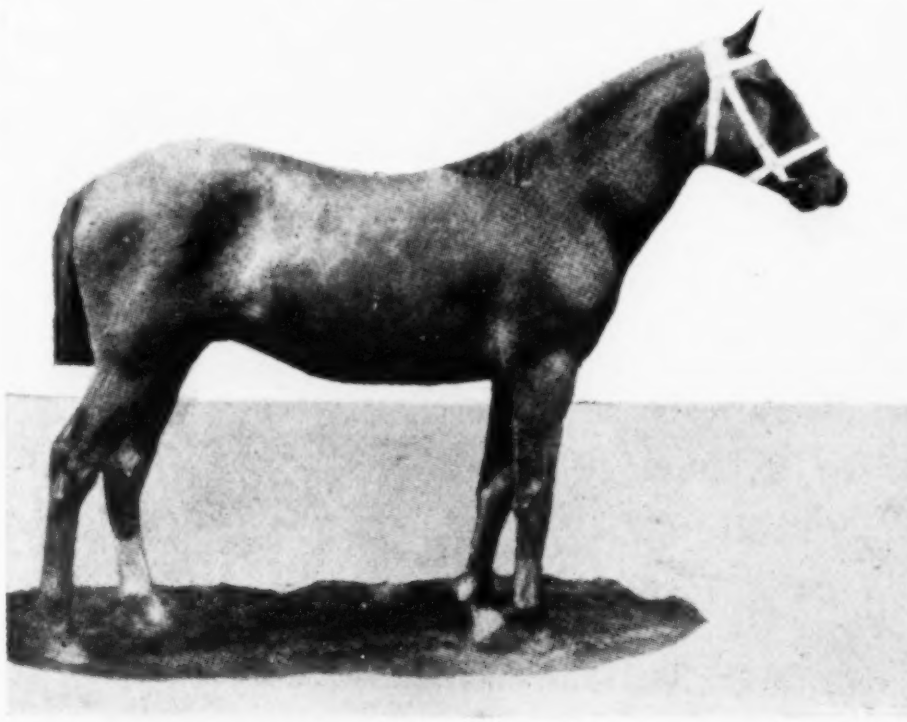
Cordicia Cardal (A. S. B. 0133) Height 1.45 M (14 h. 1″) Heart girth 1.78 M (70.-07″). Pure bred Criollo dam.



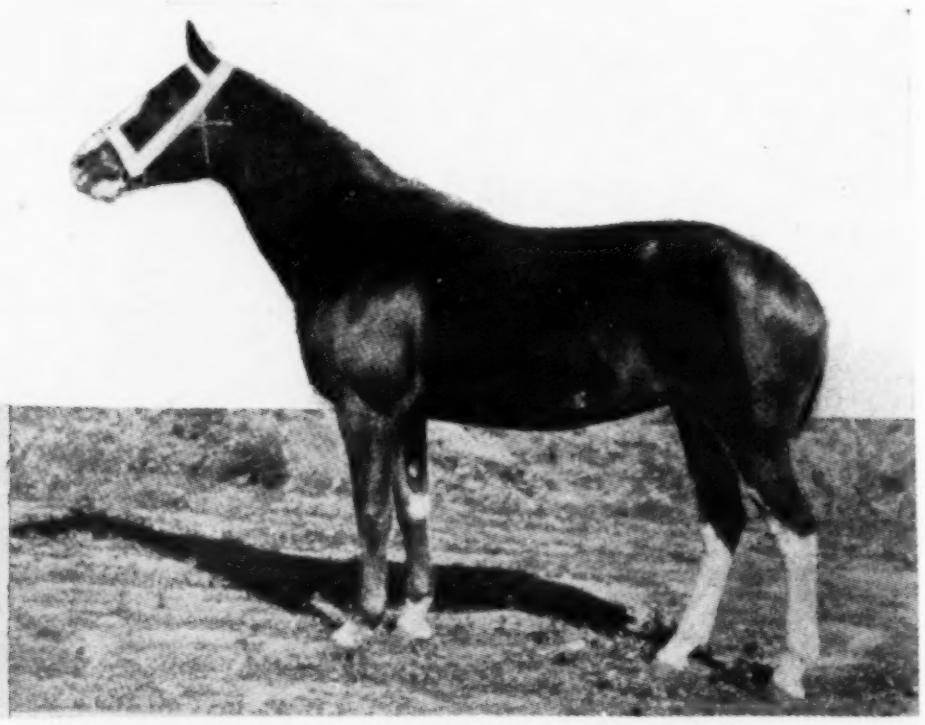
Jacinta Cardal (A. S. B. 0364) Height 1.45 M (14 h. 1″) Heart girth 1.80 M (71.25″) Pure bred Criollo dam.



Zampa Cardal (A. S. B. 0148). Height 1. 46 M (14 h. 1⅜″). Heart girth 1.79 M (70.47″). Pure bred Criollo dam.



"Halcon Cardal" (A. S. B. 70). Height 1.46 M (14 h. 1⅜″). Heart girth 1.80 M (71.25″) striped dun. Pure inbred Criollo. Male Champion of the 1921 Argentine National Exhibition.



Mangrulla Cardal (A. S. B. 0127) Height 1.46 M (14 h. 1⅜″). Heart girth 1.80 M (71-25″) Pure bred Criollo. Dam and grand dam of Olvido Cardal (Figure 1) (Selective breeding since 1887.)

THE CRIOLLO TYPE

Figure 6

There is much evidence to show that the pure Arabian has only five lumbar vertebrae while the pure Criollo, so Dr. Solanet informs me, has six, like the English Thoroughbred. —*T.C.*

the old native stock had left, especially as the last lines of the old stock were carrying on like young colts after twenty-five years or more of good service (*12*).

The mixed breeds of our army are determining proof of the inferiority of the cross bred. The Criollos for endurance have no equal.

In the army maneuvers of 1914 at Entre Iros the beautiful mixed breeds from Buenos Aires left on foot most of our mounted troops; but the regiment from San Martin mounted on Criollos never lost a man.

According to army experts the Criollos are far superior to the mixed breed.

It seems that it was necessary to mix breed *ad absurdum* before the public woke up.

IV. Renaissance of the Criollo Race (From 1875-1890)

The celebrated Matias Ramos Mejia, horse lover, and the best horseman and rider, also others, did much to bring back the native horse.

Much negative work was done in spite of many authorities who strove to have breeders return to the original stock. In 1916 some examples of pure Criollos were shown. Then the studbook was originated in which pure breds were registered. This work was done by the Rural Argentine Society under the presidency of Dr. Joaquin S. de Anchorina. But the mixed breeding had gone so far in the wrong direction that many horses not at all types of pure Criollos were presented for registry. Many stallions were rejected by judges. Such action saved many provinces from the mixed breed.

The Society guaranteed all names of horses registered.

The Association today [1923] consists of 48 Criollos Clubs;—only two or three important breeders are not included. There are as many as 1,000 individual horses registered.

V. Conformation of the Race

Two varieties compose the breed. Each preserves certain cephalic characters and other general ones inherited from the two bloods. These two bloods,—earmarks of the Spanish horse of the 16th century, were the Arabian and the Barb. That double and distinct variety (*13*) I have been able to prove studying the Criollos from the greater part of the provinces and National territories. Likewise it is found in the horses of the Republics of Chile, Uruguay and Paraguay.

The Cephalic conformation which is the most persistent trait in all animal species, through time and different means is also the one which first is appreciated as different between the two types of the Criollo race, there being always apparent in the Arabian type a greater development in the transversal diameters and a lesser development in the longitudinal ones,—a difference also found in the rest of the body. The lines of the head and body of the Arabian are rectilinear and those of the Barb convex [round].

Climatic and topographical conditions have modified the types, such as those of the marshes and of the mountains. But the characteristics of the race are always the same. The Arabian is rectilinear while the Barb is convex.

These two types, I had the opportunity of describing in a paper which I prepared for the breeder. They were adopted by the Rural Argentine Society in September of the past year.

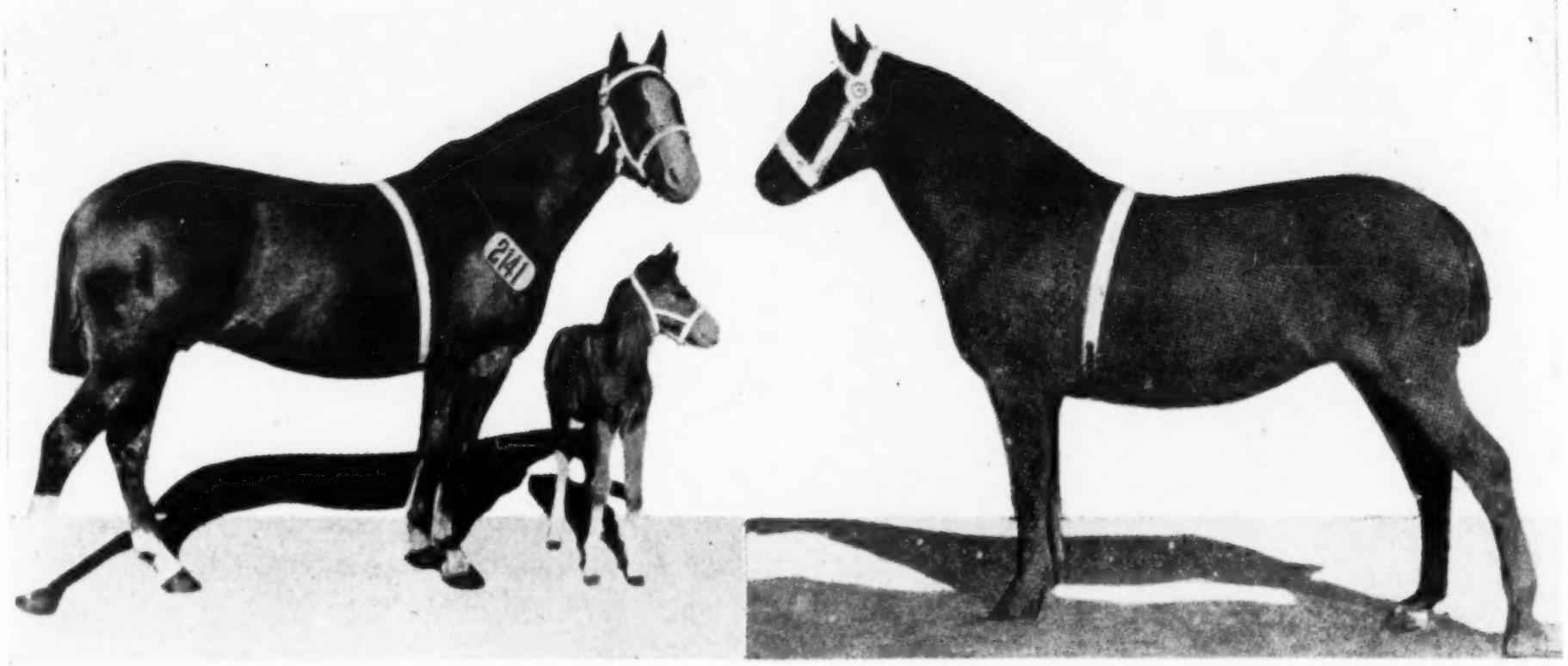
A. Asiatic Type (*Arabian*) is rectilinear in shape and of average to middle length.

Temperament

Active, neither lymphatic nor nervous. It is valiant and brave and willing when it reaches the moment for work (*15*).

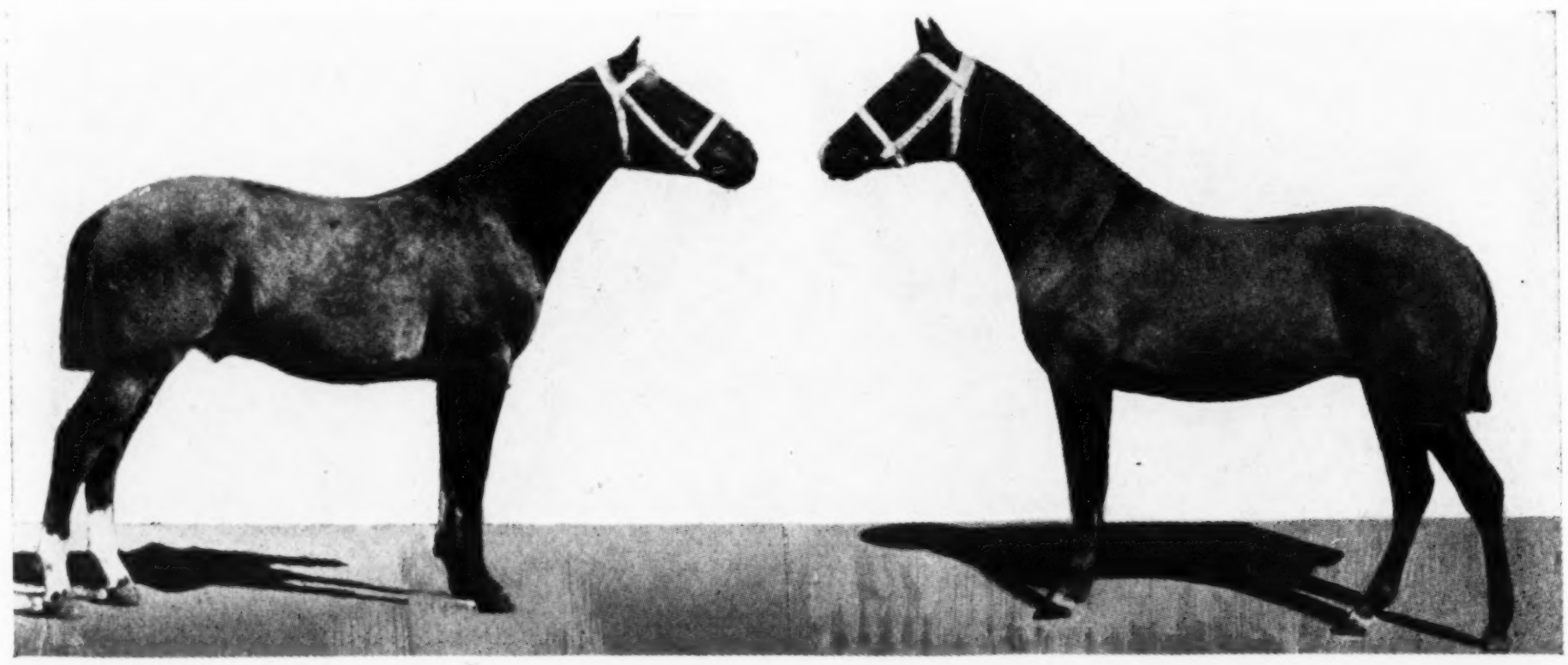
Height 14

Maximum 1.52 M (59⅞")
(14 hands 3⅞")



"Vanilla Cardal" (A. S. B. 0641) Height 1.44 M (14 h. 5/8") Heart girth 1.80 M 71.25") "Dam Silva Cardal" (A. S. B. 0161) Selected amongst the "Tehuelche" Indians of Chubut. Sire "Huemul Cardal" (A. S. B. 49) Pure bred Criollo dam. Champion mare of the 1924 Argentine National Exhibition.

"Achura Cardal" (A. S. B. 0345) Height 1.46 M (14 h. 1 3/8") Hearth girth 1.78 M (70.07" striped dun. Champion pure Criollo mare of the 1921 Argentine National Exhibition.



"Corazón Cardal" (A. S. B. 76) Height 1.46 M (14 h. 1 3/8") Heart girth 1.78 M (70.07"). (Dam "Achura Cardal," Sire "Olvido Cardal"). A pure bred Criollo. Male Champion of the 1926 and 1927 Argentinen National Exhibitions. "Its compact, tucked and ample body, short and brawny forelegs, straight and as strong as few breeds can show, reveals unexcelled working conditions" (*La Nación* Aug. 20, 1926. Buenos Aires).

"Guachique Cardal" (A. S. B. 440) Height 1.47 M (14 h. 1 7/8") Hearth girth 1.80 M (71.25") (Dam "Chalia Cardal" Sire "Haragan Cardal") Pure bred Criollo. Male champion of the 1925 Argentine National Exhibition. "Guachique Cardal" possesses all the conditions exacted by the technical authorities for the perfect riding horse" (*La Nación* Aug. 20, 1925. Buenos Aires).

CHAMPIONS OF THE CRIOLLO BREED

Figure 7

Minimum 1.40 M (55⅛")
(13 hands 3⅛")

Girth

From 1.86 M (73.22") to 1.70 M (66.92").

These measurements cover the experience of ten years and were verified by the Palermo Expositions where from 1920 to 1923 the champions and reserve champions were measured as we shall see by the table.*

No male champion nor reserve champion exceeded in height 1.48 M (58,26") (14 h. 2"). The best male champion, a four year old, did not exceed 1.45 M (57") (14 h. 1").

Concerning the zootechnic excellence of the race it is found proven by European specialists, the highest authorities in animal work, Drs. Baron and Crevat, who have determined the following formulae:

$$\frac{T^2}{A} = 2.1125$$

(T) represents girth measurement and (A) represents height to highest point of the withers. The quotient represents the index of the usefulness of the horse for saddle work. This formula tells us the best type of saddle horse and it applies to the Criollo champion of 1923, which is

$$\frac{1.75^2}{1.45} = \frac{3.0625}{1.45} = 2.1120$$

the quotient being almost identical with that of the ideal type resolved upon by the European authorities.

These same zootechnic experts have deduced another formula which permits our determining the weight which a horse can conveniently carry on his back while at a trot or a gallop, which I also consider interesting in its application to the Criollo race.

Here is the second formula of Baron and Crevat:

$$\frac{56 \times T^2}{A}$$

Applied to the champion Criollo of 1923 it gives the following expression:

$$\frac{56 \times 1.75^2}{1.45} = \frac{56 \times 3.0625}{1.45} = 118 \text{ Ks. } 275 \text{ gs.}$$

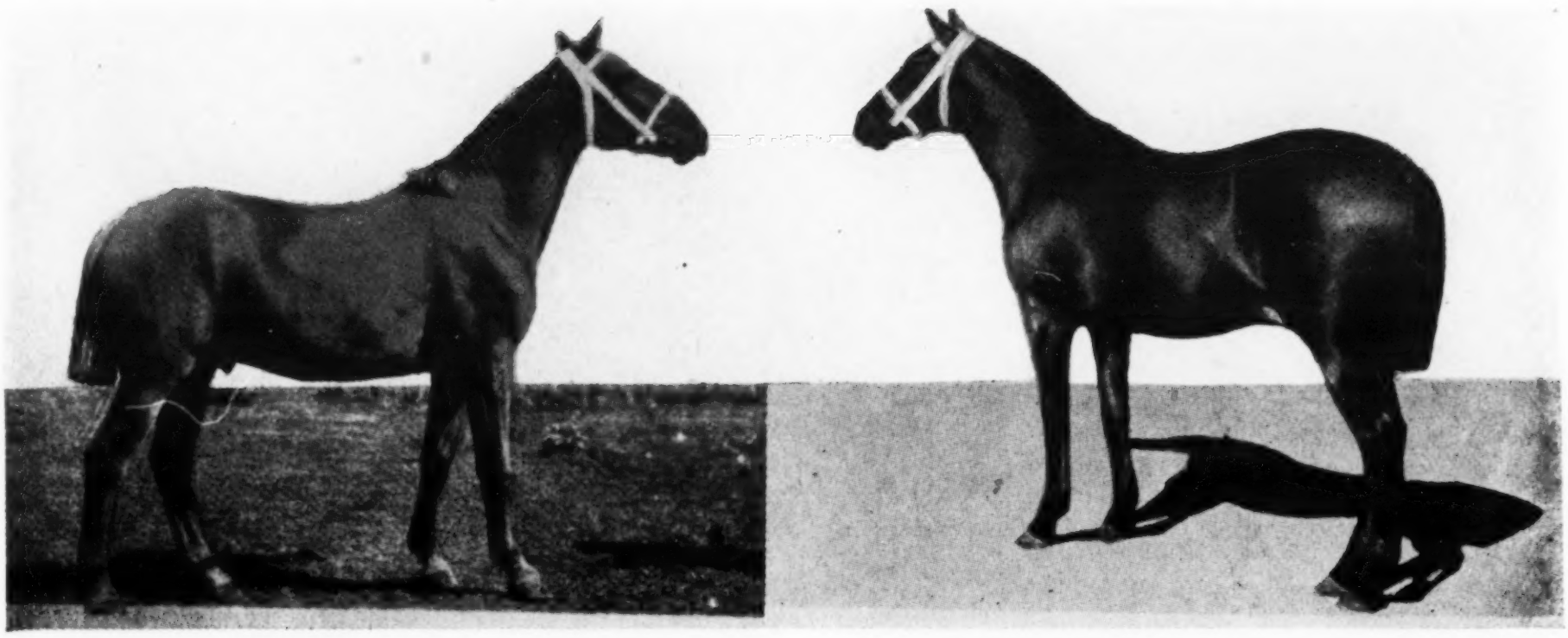
(approx. 261 lbs.)

It means that the average Criollo can carry easily the average weight of a cowboy or soldier.

Frequently there is recommended for war, by some men, a horse greater in height than the Criollo, because they are not aware that raising the height decreases the strength of the animal *(16)*. In fact this same European formula demonstrates to us that if the horse of 1.52 M multiplied by 1.86 M can carry with ease 127 kilos (280 lbs.) the horse of 1.60 M with same girth measure can carry only 121 kilos (266 lbs.). In other words, a greater height gives more beauty for driving and military reviews but less power for work. And to those who think that the deficiency is overcome by increasing the girth measure in proportion we quote the French Prof. Dechambre who observes and proves with mathematical experiments the impossibility of doing it arbitrarily. Increasing, in excess, the girth gives the animal an overabundance of gross weight. This overabundance passing beyond the average weight of the saddle horse (400-450 ks.—882.4-992.7 lbs.) makes him more and more unfitted for that work. The excess weight causes loss of agility; more effort for carrying its own weight; greater waste of the legs; strong and violent reactions in the joints and tendons; greater food consumption and slows down the leg action.

The experience of the cattle raisers (the actual field men) teaches also that the horses 1.40 M—1.45 M (13 h. 3⅛"—14 h. 1") in height with correlative girth measure are those which give the best results for the man who does the work, especially during harsh and long winters. And the horse that survives in the heavy field tasks proves to be the best for war service.

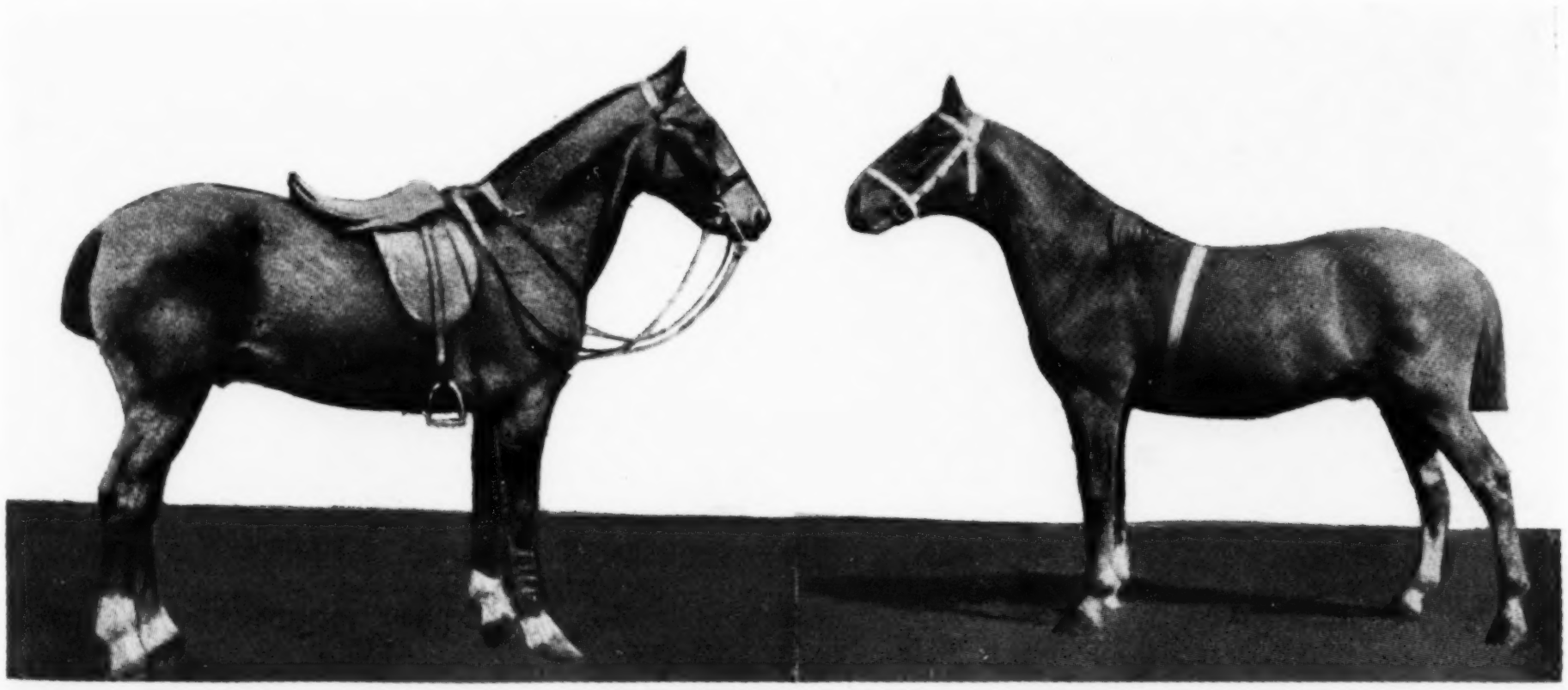
*As the table (p. 18 El Caballo Criollo) is summarized here it has been omitted from the translation.



"Gateado (striped dun) Cardal." Height 1.46 M (14 h. 1⅜") Heart girth 1.79 M (70.47"). One of three horses bought for the Republic of Paraguay. A pure bred Criollo. Note the flexor tendons which are as broad as the canon bone.

"Rebenque Cardal" (A. S. B. 145) Height 1.46 M (14 h. 1⅜") Heart girth 1.76 M (69.29") A pure bred Criollo.

Herr Luis Pfannl, a cavalry officer of the Austro-Hungarian army and chief of one of the imperial studs who made the purchases for the Republic of Paraguay says: "that the Argentine Criollo ranks amongst the best in the world for camp work and army." (*La Razón* Apr. 14, 1926, Buenos Aires.)



"Sandow," a pure Criollo polo pony, played by Rugby winner of the 1897 Championship of England. "This horse, swift, always ready and with a mouth of silk, played twice in the last match." (T. B. Drybrough; "Polo," London).

"Antenor Cardal" (A. S. B. 581) Height 1.46 M (14 h. 1⅜") Heart girth 1.79 M (70.49"). One of two pure bred Criollos exported to The Republic of Uruguay.

The Criollo mares are not only the dams of the celebrated Argentine polo ponies, but in the Anglo-Criollo cross without admixture of other blood, produce superb specimens. See Note *20A.—T.C.*

CRIOLLOS FOR SPORT AND FOR WAR

Figure 8

HIGH IN THE ANDES

Figure 9

Mancha and Gato, pure Criollos, selected by Dr. Solanet from his stud for the world's record ride described herewith.

The greatest triumph yet achieved by the Criollo, as a test for the toughness of all muscles and the stamina of all organs including the brain; and the longest and most gruelling ride on record, was that successfully completed by A. F. Tschiffely, who, with two 17 year old horses, rode from Buenos Aires to Washington, 9600 miles, starting in April, 1925, and finishing 900 days later with the same horses. They are here shown "crossing the Ticlio (16,625 ft.) before reaching northern Peru where they made 100-mile journeys without water or food of any kind."

The greatest elevation reached was (18,000 ft.) at "the El Cóndor Pass between Potosi and Chaliapata, Bolivia." The extremes of temperature from sea level to 18,000 ft. and the varied footing, crossing swamps and deserts and climbing rock trails of mountains—the while finding their own fodder from the growth of the varied zones and assimilating such fodder—are sufficient proof of the value of the Criollo blood especially when one contrasts it with the delicacy of the modern "racing machine." Mancha and Gato came from the arid regions of Patagonia."—*T. C.*

FROM BUENOS AIRES TO WASHINGTON

Figure 10

A. F. Tschiffely with Mancha one of the Criollo horses on which he made the remarkable ride from Buenos Aires to Washington.

Mr. Tschiffely deserves the greatest credit for bringing himself and the horses through alive.

In a letter to me dated March 15, 1929, he says:

"The American 'mustang' and the Argentine 'Criollo' are almost brothers as far as blood is concerned. Unfortunately the mustang has disappeared and the same fate nearly befell the ancient horse of the 'pampas' . . . . I brought both (the horses) back with me, and now they are back with the old 'tropilla' (herd). Both are in excellent condition and Mancha feels so independent again that he bucks like a bronch when a stranger mounts him."

"Both will remain here until they die, and then they will be donated to the National Museum here."

In a letter to me dated Dec. 24, 1929, he says: "Both the horses I used on my long test-ride to Washington are in excellent condition and work every day on Dr. Solanet's estate.—*T. C.*

FIFTY MILES A DAY FOR OVER TWO WEEKS

Figure 11

"Lunarejo Cardal," engineer Abelardo Piavano up. This is a pure Criollo—bred at the "Cardal" stud—photographed 10 days after completing the Buenos Aires-Mendoza record ride in 1925. This 14 year old horse carrying 209 lbs. (95 kilos) travelled 857 miles (276 leagues) in 17 days (average, 50 7/17 miles per day).

It would be interesting to compare this ride with some of the endurance tests made in the United States. Since the United States Tests were for distances less than one half that of the Argentine—although more weight was carried—and as I have no detailed data of the conditions of the Argentina ride, a comparison is not of great value. However, one of the longest United States rides shows the following accomplishments: "Crabbet," pure Arabian gelding, of the Maynesboro Stud; Chestnut, 15 h. 2 in., weight 925 lbs., 12 year old, travelled from Red Bank, N. J., to Washington, 310 miles, carrying 245 lbs., at about 60 miles per day for 5 days; total elapsed time, 49 hrs., 4 min. Of the 17 horses starting in this 1921 Test only 6 finished; Crabbet, showing the best condition, won.*—*T. C.*

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*Data about the 1921 United States Test taken from the Maynesboro Arabian Stud Catalogue for 1925.

"Matrero Cardel"
Height 1.44 *M.* (14 *h.* 5-8 *in.*)
Heart girth 1.76 *M.* (69.29 *in.*)

"Africano Cardel"
Height 1.45 *M.* (14 *h.* 1 *in.*)
Heart girth 1.78 *M.* (70.07 *in.*)

ARGENTINE "GAUCHOS" (COWBOYS) MOUNTED ON CRIOLLOS

Figure 12

This picture shows well the swinging gait of the Criollo which is also characteristic of the Arabian. It also shows the headgear, without bit, characteristic of the "pampas."

The late Randolph Huntington told me, many years ago, that it was the degree of excellence of the nervous system that determined the capability of the horse, and this, combined with well balanced action (not size), his ability to carry weight. W. R. Brown in his recent book, "The Horse of the Desert," says that the brain and the intelligence control the nervous system and the muscles, so that the breed of horse with the greatest brain capacity would be the most useful type. *T. C.*

Coat Colors

In this breed of horses the coat colors and their details are indicated by the following names:

The duns: dark dun, striped dun, olive dun, orange dun, yellow dun, grey dun and light dun. Reddish bay, blue dun, dark chestnut and sorrel; grey blue, roan and rose; the browns; dark, bay, light brown and mealy; the grey and the white. The variations of tone like dark chestnut and dark bay, ox-blood, blue grey white and black, light grey blue, clear blue and dark blue, etc. Finally if the horse is of a single color it is called solid; but they are more frequently combinations, as the chestnut with while mane and tail, red roan, sorrel dun, bluish white and porcelain color, brown with white face and black with white face; piebald, light piebald and pinto, dark piebald, brown piebald, bay piebald; black and white, red and white or chestnut and white, brown and white; dun and white; white and striped dun, sorrel and white, dark chestnut and white, blue and white, roan and white, etc.*

* There are many more color combinations, including one, two, three and four white legs, which I have not translated. *T. C.* "In the Argentine pampas there are some 500 different definitions for colors in use." From a letter of A. F. Tschiffely to T .C. dated Dec. 24, 1929.

The striped dun, the dark chestnut, the blue grey and the bays will be preferred. The striped dun is the classical Criollo coat. Of the sixteen champions and reserve champions of the last four years, ten have the striped dun or dark dun coat of the Spanish and two were yellow duns.

We believe that the striped dun is the most characteristic and useful covering of the race. This appears in the first pictures and water colors of the Plata river,—those of Vidal, published in London 1820; also, the historians, especially the naturalists, describe it as the common color of the wild herds. Felix de Azara, who explored these regions during the Colonial epoch (1789-1801), in referring to the wild herds, says in his book *Trip Though South America*, page 166, "All are of a chestnut or dark dun, or rather what we call dark chestnut and striped dun."* Again quoting Azara (Col. 2 par. 1. 1):

> These wild S. American horses which were all of a uniform color *(17)* might make one think that the primitive horse was a dark dun and that if judged by color, the race of horse of the dark dun coat is the best of all.

The fact which I have observed in various young horses of striped dun coats at birth and which at six months, one or two years, are roan in part or in all of their body, just as the striped dun at two or three years turns to blue dun, is that they constitute a biological proof of the antiquity and the racial value of that Criollo coat.

It is a phenomenon borne out by natural sciences that each individual during the whole development of its life reproduces the different stages of evolution of the kind to which it belongs. In the same way the actual examples of the aforementioned coat colors show simply an atavism of those imperishable traits which explains the proverbial courage of the individual inheritors of that coat.

The striped dun is the best for cavalry and is the color that survived in the primitive life (*17A, 18, 18A*).

The Asiatic Type (Arabian)

Head

A broad forehead and short muzzle; rectilinear profile; small movable ears; eyes expressive and located upon the edge of the frontal plane. Jowl well developed; nostrils full and open; lips fine and movable; gullet broad; jaws wide apart; a fine snout. The head of the Criollo is short and in the form of a pyramid, broad at its base and fine at its vertex with powerful jaws well developed. The skull full and face very short. Its eyes gentle with a childlike appearance.

Neck

Well united to the head; its top line slightly convex, carries an abundant mane and is continued to the withers harmoniously; the lower line of neck is almost straight; of a proportioned length, it is fullest at its base.

Withers

Muscular and slightly projective; of sufficient length to permit the efficient discharge of its functions.

Back

A straight profile with broad and long proportions to complete superiorily a spacious girth.

Loin

Short, wide and muscular, well united and in a straight line with the back, it

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*To the horseman there is an inconsistency in using the words chestnut and dun to describe approximately the same color; but from the paragraph that follows, that is evidently Azara's intention. He uses the Spanish word "Castaño," which the dictionary translates as "chestnut," which I have used. The "dark chestnut" used by me in the same sentence is a translation of Azara's Spanish "Tostado," which in the Argentine describes what in the United States is a dark chestnut coat color. A. P. Maudslay's translation of Bernal Diaz's *Discovery and Conquest of Mexico* has "sorrel" for "castaña," "parched sorrel" for "alazon tostado" and "dark chestnut" for "castaño oscura." The dictionary also gives "hazel" for "Castaño" and "Lively light brown" for "tostado." These latter equivalents help to clear up Azara's statement.—*T. C.*

gives the impression of a strong bridge, which transmits completely the action of the hind quarters and easily raises the weight of the fore part of the body.

Rump

Regularly long with excellent muscular placement, well developed, broad and semi-oblique.

Tail

Short and heavy dock,—which is considered proper for good animals; well covered with abundant hair.

Chest

Full and with strong muscles, the side wall of the girth is deep and well arched; the good development of its perimetric girth being a quality obtaining in good examples and very much appreciated by Criollo breeders.

Belly

Well ribbed out and connects with the lower line of the girth without a break. Large when the fodder is bulky and little concentrated.

Flank

Short and full.

Shoulders

Length in proportion to that of the head and of a direction slightly oblique. The muscles of the shoulders like those of the forearm and arm call attention by their appearance of development and strength. The two points of the shoulder blades are well separated to take care of an expansive chest.

Foreleg and Knee

In a straight line.

Forearm

Muscular and of good length.

Knee and Canon Bone

Short, broad and deep. The tendons are clean, strong and prominent.

Joints

Lean, rounded, neat and hard. The fetlock joint is free from excessive hair which does not appear over the tendons nor over the pastern.

As distinctive of the Criollo there are durability, neatness and strength of all its articulations and joint movements [smooth action]. The joints we find without blemish even in overworked and aged animals. The good development of its boney system is a quality arrived at with just reason.

Pasterns

Relatively broad, short and thick with medium inclination. Among defective breeds of horses the upright type of pastern is found; rarely the sloping joint.

Hoof

Is proportioned to the size of the body; has a toughness and density like that of the mule. The black hoof is preferred.

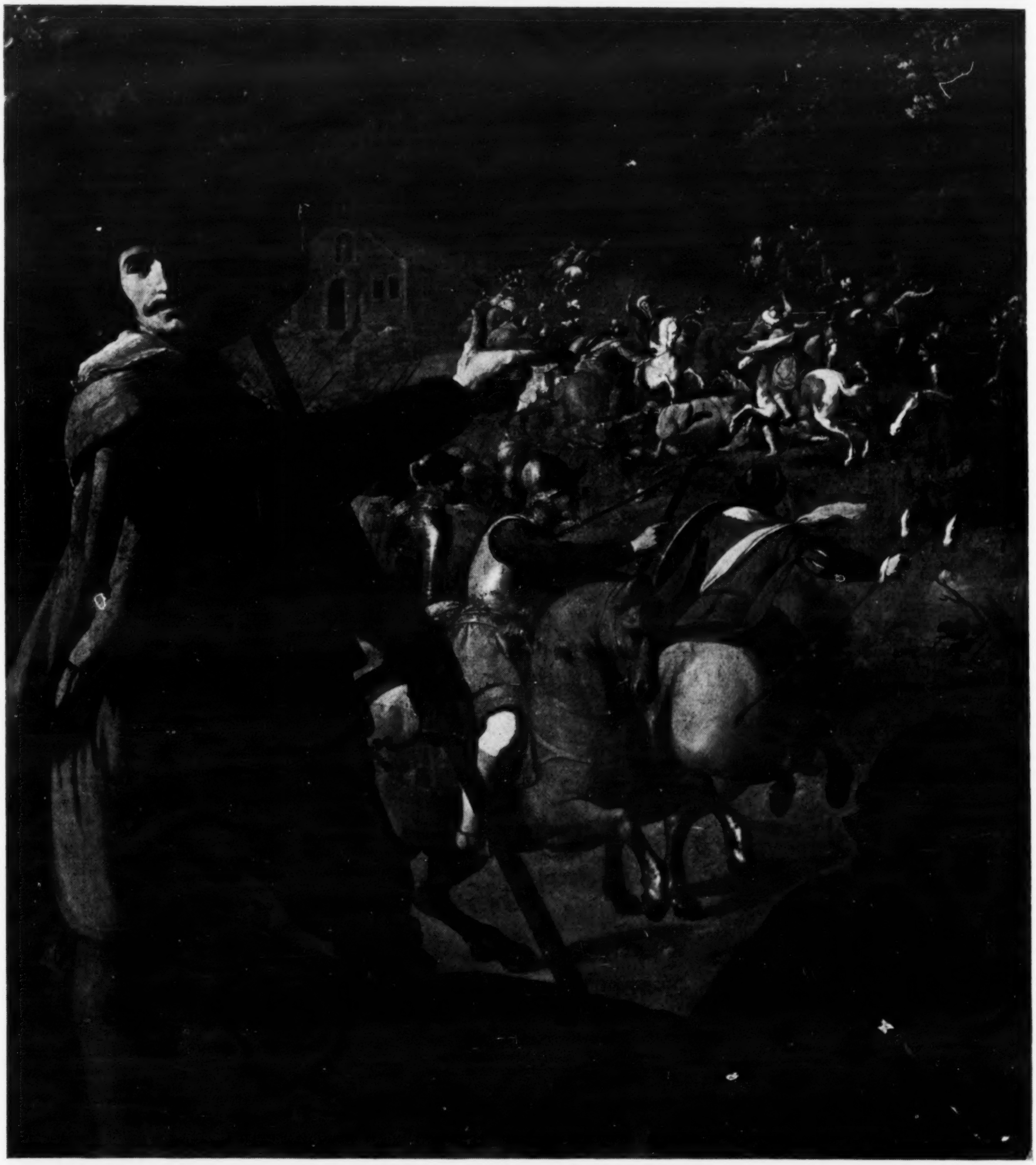
The front feet are slightly turned in, not considered by our countrymen, a defect but on the contrary a correlation of the strong and good looking horses.

Thigh and Leg

Of a firm, vigorous, dense and elastic muscular development. This is another of the good racial traits. The legs are of good length and broad in the region of the hock. The cords of the hock are well separated from the back of the shin bone. The hind legs are not too crooked, nor should they be,—because it is known that straight legs give greater speed, but a good saddle horse requires more resistance in that articular surface than that permitted by the straighter leg, because the straighter leg forces the hock to receive at maximum the hard reactions which the shin bone transmits to it almost directly and vertically. And if in this articulation of the race horse, speed has been obtained at the expense of the resistance of the most important joint of the animal we should not seek it in a working animal which should be stronger, even if the result is less speed.

Hock

The hock, so important in the posterior movements of the body, is an axle upon which move the weight and strength of the whole body. Not only is it graceful in its proportions, lean-



BATTLE WITH THE MOORS
Figure 13

A painting of the Spanish School by Zurbaran (1598-1662).*

This painting is a very interesting record, for our subject, as it undoubtedly shows the form and colors of a type of Spanish war horse of the late 16th and early 17th centuries; and while the type may be somewhat idealized to meet the then prevailing taste in horse flesh as well as the painters' ideal, it seems reasonable to believe that from it we may judge approximately of the horses that were brought to North and to South America during the 16th Century as the ancestors of the mustang and the Criollo. The battle here depicted occurred in 1340; the half armour† of the Christians, the dress of the Moors and their arms are correct for this time.‡ Although at the time of the Spanish Conquests heavy full plate

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*Painted about 1637 for the Carthusian monastery at Xerdes de la Frontera (Jerez). Probably the battle of Rio Salado, Oct. 30, 1340. (From Bulletin of the Metropolitan Museum of Art. V. XV, No. 11, p. 245; citing R. B. Merriman, "The Rise of the Spanish Empire, V. I, p. 127, as to the battle and its date.)

†"The Great Horse," by Sir Walter Gilby, pp. 13 and 14.

‡"The Alhambra," by Washington Irving, pp. 237-8-9.

ness, and open angle, but expresses its ability to carry out the functions which belong to it. From the rear view the hind legs are straight. For polo and rodeo work, the hind legs although always straight should be well separated, corresponding to a wide rump.

B. The African Type (Barb) is convex [round] in profile and of medium size and form.

This other type of the equine Criollo race is distinguished principally from the Asiatic type by a lesser development of the transversal measurements, by greater lengths of all the parts of the body and by a front profile of the head which is half sheep-like and with the eyes more at the side. The shoulders are less oblique, the back more convex and the rump more sloping; in some cases a drawn in (literal trans. reined) haunch, with the tail placed lower than that of the Asiatic type. The mane is less broad; the tail less thick.

The other details of form and appearance are the same as those of the Asiatic.

Between these two types there is a whole scale of variations which seemingly unites them.

The most pronounced characteristics of this type (African) are: Nobleness, intelligence and valor. Never is he dull or sluggish. The head is broad at the base, with pronounced jaw bones and fine at the muzzle; medium neck, neither short like the percheron nor long like the race horse; shoulder slightly oblique; withers muscular and somewhat low; short loin; a rump semi-oblique. Forearm and leg long and muscular. The bones of the lower leg are short with prominent flexor tendons. The joints are lean and round. The fetlock hair is of medium length and is only at the joint.

Pasterns somewhat long—longer than those of the percheron. Hoofs medium.

It is of an active character.

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armour* was worn, there must have been a middle weight type of horse neither a great war horse nor a Jennet that was capable of bearing the weight of a warrior in full armour, as it is unreasonable to assume that the painter known to have "a passion for reality" could have painted other than horses of his day. While these horses are very sturdy, full built, and well fed they are not tall and are hardly the great war horses as can be seen by contrast to the riders. The records of the Conquests contain numerous references to the active nature of the horses.† These horses are of a spirited and active type, and exhibit other eastern traits by their small, pointed ears and low set eyes. The head of the white faced horse to the right is especially eastern in character; and most of the heads to be seen in this and in the other reproductions of paintings herewith, are short and pointed with expansive foreheads and small muzzles.

The colors are mostly grey and dun; there are piebalds, a few bays and browns and one dark blue grey with a light mane. All these colors, especially the dun and many more, are highly characteristic of the Criollo of today.—*T. C.*

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*"The Great Horse," by Sir Walter Gilby, pp. 13-14, "Conquest of Peru," W. H. Prescott, V. I., pp. 292, 302, 349.

A print of three Chilian Spanish Noblemen showing one horse and rider harnessed in complete quilted mail is reproduced, from Ovale's "Regno de Chile" (Rome, 1648), in "Narrative and Critical History of America," by Justin Winsor V, VIII, p. 302.

De Vaca—2nd Adelantado of Buenos Aires, 1541-44—in a fight with the Indians of La Plata, "ordered the *breast plates* to be put on the horses, and, thus arrayed in order of battle, our forces charged the enemy with cries of 'Santiago.'" ("Conquest of the River Platte." Hakluyt Society. V. 81, p. 146).

†"Conquest of Peru," W. H. Prescott, V. I, p. 365, foot note citing Hist. du Perou, Ch. XXII.

From a photograph. Reproduced here through the courtesy of the Metropolitan Museum of Art, New York.

"WOLF AND FOX HUNT"

Figure 15

A painting of the Flemish School by Rubens (1577-1640), showing war horses of the late 16th and early 17th centuries. The Spanish rule in the Netherlands brought many Spanish horses there. The dappled cream grey is a heavier horse than any shown in the Zurbaran painting and is hardly a Spanish horse. The other horse is a bay and white piebald with a bay and white mane, whose head is worth study for its great horizontal breadth through the jowls, its shortness, its small and breedy muzzle, its short pointed ears, cut out on the inside, and for its general leanness. See also legend to Figure 13.—*T. C.*

Courtesy of Metropolitan Museum of Art.

VI. Manner of Preserving the Criollo for First Place Among Saddle Horses

It has been said that the Criollo horse is a degenerated Andalusian horse; but this statement demonstrates that those who think thus are absolutely unaware of the teachings of science and experience.

The Criollo race was formed by means of a rigorous natural selection practiced through four centuries of this natural training school. It began with those individuals imported by the colonizers of La Plata River and continued upon their progeny. Scientifically it is without question that the individuals organically weak, had to suffer the elimination which the rigors of this method imposed upon them, leaving the sturdiest to survive. As a consequence the race has not been made up of degenerates but on the contrary of the most perfect through natural selection *(19)*. Again if the process had been degenerative it would not have ended by the creation of a new family (breed); and if this was formed and does exist, as must be admitted,—even the mockers admit it,—this fact is sufficient to contradict even the hypothesis of the fact that the Criollo may be a degenerated horse.

Some who speak of degeneration, without knowing the force of the term, are basing their opinion, perhaps, upon the reduced size which the Criollos

"VENUS AND MARS"
Figure 16

A painting of the Italian School by Veronese
(1528-1588)

The best Italian and the best Spanish horses of the 16th Century were both built on the Eastern blood so that the horse shown here would vary little from the heavy Spanish horse of the same period, in fact, this might be a Spanish war horse, or it might be from the famous stud (1517) of Gonzago Marquis of Mantua whose stallions were in great demand* at this period which was the beginning of the Spanish-American conquests. This picture is shown because of the horse's remarkable head which tallies in all important points with the best Arabian heads.—*T. C.*

See legend to figure 13.

From a photograph. Reproduced here by courtesy of the Metropolitan Museum of Art, New York.

reach in certain parts of the country. Neverthless, that very feature has the force of adaptation to environment or it may also be called improvement. To interpret that evolving form as degeneration, is simply absurd. From the standpoint of science actual use also demonstrates the very distinguished condition of the Criollo. In fact the tests to which the Criollo was subject for a century in the civil wars and wars for independence; in the organization of our pastoral and agricultural life as well as in the military maneuvers of our own time, and the proofs established in European countries leave the question without the least doubt.

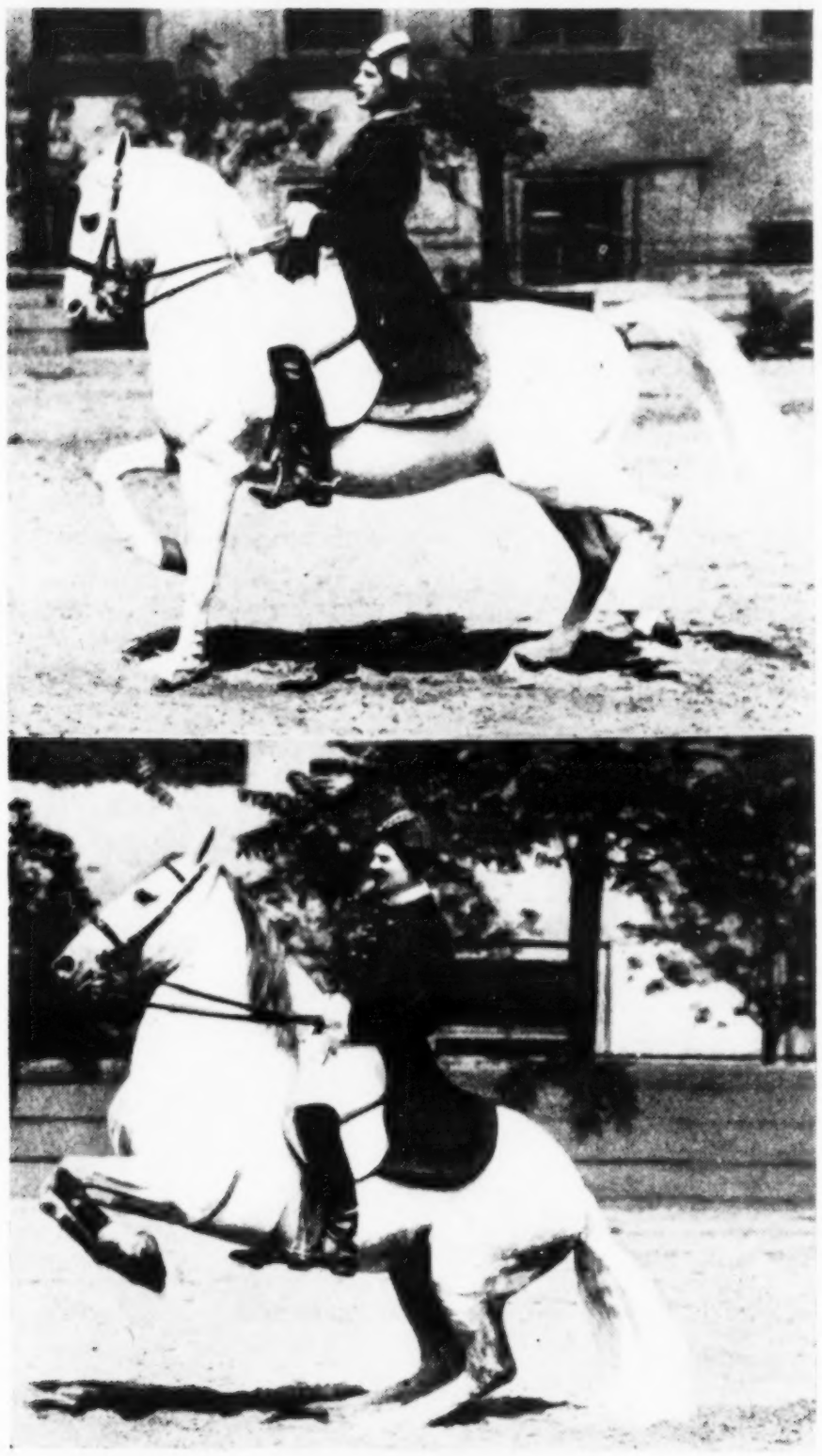
Referring to the last comment:

1. In the Vienna-Berlin ride of 1909, in competition with the best in Europe, the Cordovan Criollo, ridden by Robert Bahckle, came in first *(20)*.

2. Reference to a field day for polo in England in 1897, offers an irrefutable argument. T. B. Drybrough, polo player, in his book on polo London, 1906—shows pictures of horses excelling in the game in England. Among them are several Criollos—such as Menelik, Peter and Chacarero. "These three are Criollo ponies from Entre Rios" (p. 363).

(P. 362) Drybrough expresses his admiration on the ease of action of the Criollo,—"a unique method of gathering up his quarters as if to sit down on a quick turn ("and then prop-

*"The Horse in History," by Basil Tozer, p. 157.



LIPPIZANS OF THE SPANISH RIDING SCHOOL, VIENNA

Figure 17

Neapolitano Salva, performing the Spanish Trot.

Favory Ancona II performing the Levade.

These horses are a product of domesticated selective breeding since 1580. It is interesting to compare their conformation and spirit with those of the horses in the 16th Century paintings, also bred under domestication, and to the Criollos, until recently, self bred in a wild state. All these breeds were built on Eastern blood. The hind legs of all these horses are not as straight as those of the Thoroughbred. The height of the Lippizan is not much greater than that of the Criollo (average 14 h. 1½ in.) as will be seen in the subjoined quotation:

"Of the 14 Lippizans before us, only two were 15 hands high, the average was 14.3; yet they looked strong enough to carry as many riders as could be packed on their backs together." (Borden.[5] p. 52.)

The Lippizans are pictured here in well fed show condition.—*T. C.*

From photographs. Reproduced here through the courtesy of Miss Anna Hubbard.

PHILIP IV OF SPAIN

Figure 18

By Velasquez (1599-1660)

From the date of this painting (1635-40) we may judge of the Spanish horse of the early 17th Century also of the 16th Century, as heavy plate armour was used during both these periods. This is hardly the great war horse or the light Jennet; but a middle weight horse of remarkable finish and Eastern spirit, with the deep heart girth characteristic of the modern Criollo. It is improbable that all the horses brought by the Conquorers were of this quality, although Dr. Solanet says: "Only the best were brought to meet the difficult conditions." See legend under print of Zurbaran painting.—*T. C.*

Reproduced from a print.

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ping around off his forelegs like a rabbit") (*20A*).

(P. 361). Speaking of his qualities for polo he says: "Those who had formerly scorned the small Argentine mount found that they were glad to have him as a partner."

This affirmation from so high an authority on sport, cannot be criticised for partisanship or fickleness and thus verifies the following table.* (P. 325 "Polo," Drybrough), Ponies ridden by "Rugby" winners of Champion Cup of England, 1897, in the finals against the Freebooters."

From this data we see that they played three small Argentine ponies, among those which were used by the

victorious team in what was considered the most important event in Europe for the saddle horse breed. These three animals were chosen by E. D. & G. A. Miller. "The Millers had had the widest experience with English ponies of the greatest worth." (Page 361, par. 3, Drybrough's book.)

Among them appears Sandow, whose photo we reproduce (Figure 8), used in the 2nd and in the 6th Chukker for which the best horse is always reserved.

Two English ponies, Amazon and Black Beauty, were not able to end their chukker, needing the aid of Pretty Girl and Nip Cat; the three Criollos on the other hand not only did not need aid but actually they played twice in the same game.

Expressions of commendation were made by the English sport writers for having the Criollos as first class participants. *(21)*.

And thus we answer today those who discredit the valiant and humble Criollo saddle horse, accusing him of lacking agility and stamina, and of being no better than the representative of a degenerate race.

Those who demand a better breed, attained by artificial selection, seeking external points of conformation, forget that such points are worth nothing as regards the internal makeup of the animal machine singularly essential for the work for which it is intended.

Selection by external conformation is admissible when treating of breeds of elegance but it is a thing alleged contrary to what it is intended to prove, namely, the perfectment of the working type whether this be for the ranchman or for the warrior. The only scientific and useful method of attaining this end is by keeping in mind a selection for work or sustained effort.

A good example of what we have just said is offered to us in the breed of race horse which has been selected for the track. It is not chosen for reproducing the prettiest animal but for the one that runs the best, that is to say, the machine that functions best in the duty to which it is assigned. And the same method has been used with the Breton and the Percheron, selecting from the plow or the cart the reproducers of the next generation.

In the same way we ought to make sure that the selection in the work of conserving and perfecting the Criollo race is not done alone in the show ring. The judges, however, intelligent and expert they may be, can judge only the exterior points of the subjects shown. The functioning of the internal organs and the physiological worth of the tissues of the complex organism, the judge looking at the exterior, cannot appreciate, without giving the animal the test of work. If we exclude then, functional selection, we may beautify the race by artificial selection, but from generation to generation we shall diminish thereby the hardiness, energy and other excellent qualities for work which, in such a high degree, the Criollo possesses. We may attain a saddlehorse, picturesque, of agreeable form and even brilliant, but filled with straw and without strength for work *(22)*.

The conservation of the outstanding abilities of the race, we shall attain only by functional selection.

We ought to choose the reproducers from among those that have excelled in work after real and long rides made without special rations, without blankets, and without any shelter. While such tests may not be regularly organized now or later on, breeders ought, in the future, to choose the reproducers from those in their establishments that have worked in various ways the entire year. The good looking ones,—that is those which are naturally good looking. —the most docile, the most frugal: these will be the best as reproducers.

It is, indeed, urgent that the state, under the direction of Army officers and, with the collaboration of the

*Table omitted because of partial summary that follows. T. C.

"Association of Breeders," organize rides,—for the selection of the cavalry horse,—with minimum distances of 200 leagues (600 miles) and with a weight no less than 100 kilos (220 lbs.). The course should be varied for day and night; allowing only the food which there may be along the road; and all reproducers should have this test on equal terms. In a word, such a test would constitute rides with work, which is analagous to marches in war time.

Courses of twelve hours on the level race track, or the marches of from two to three days from Buenos Aires to Rosario or Mar del Plata* with weights more or less than 70 kilos (144 lbs.), and with good rations prepared on the road, are not the ones to demonstrate which may be the best animal for war. The frontiers of the Republic are a greater distance than those places; the soldiers with their equipment weigh somewhat more than the jockeys of the race track; nor is it easy after a battle charge or in reconoitering to find stabling, blankets, rations or even drugs as in the fancy studs.

To conclude: I have revealed something of how much can be said about the good qualities of our Criollo horse and upon the necessity of intelligent selection, all with the conviction that in breeding it one will contribute to the economic and military defense of the Republic. (*23*).

NOTES

NOTE 1. "The missing link has not been found" to upset the known facts that the original domestic horse in North and in South America was a Spanish importation; but speaking in a broader sense, with the discovery in Northern Texas in 1899 of *Equus Scotti*, a species of fossil horse, the "near resemblance to the modern animal appears at a glance. The difference from the domestic horse is chiefly in proportions."† *Equus Scotti* is considered to complete the evidence of the various stages of the evolution of the horse, at any rate in North America. Interview Jan. 8, 1930, with S. H. Chubb.

NOTE 2.—"There is abundant evidence to prove that in the late Quaternary, during and after the Glacial Period, but nevertheless many thousands of years ago, prehistoric man chased and killed wild horses, using their flesh for food and possibly their skins for raiment. This period was followed by a second, during which wild horses were captured, broken to rude harness and driven."[13] (p. 39.)

The above note does not apply to the Western Hemisphere. (Interview Jan. 8, 1930, with S. H. Chubb.)

NOTE 3.—De Soto, crossing parts of Alabama and Mississippi, on his expedition to the Mississippi River, in 1540, encountered opposition, at some places, with the Indians who suffered punishment and sought a parley. At Achese the Chief made a speech to De Soto saying: "Think then what must be the effect on me and mine, the sight of you and your people, whom we have at no time seen, astride the fierce brutes your horses, entering with such speed and fury into my country—things so altogether new as to strike awe and terror to our hearts—"[15] (p. 55.)

NOTE 4.—"The use of fire arms [by Cortez when he conquered Mexico in 1519] gave an ascendency which cannot easily be estimated—." "To all this must be added the effect produced by the Cavalry. The nations of Anahuac had no large domesticated animals, and were unacquainted with any beast of burden. Their imaginations were bewildered when they beheld the strange apparition of the horse and his rider moving in unison and obedient to one impulse, as if possessed of a common nature—and as they saw the terrible animal with his 'neck clothed in thunder' bearing down their squadrons and trampling them in the dust, no wonder they should have regarded him with the mysterious terror felt for a supernatural being."[20] (p. 439.)

NOTE 5.—Ulrich Schmidt, an eyewitness of one of the fights that Alvar Nuñez Cabeza de Vaca,—2nd Adelantado of Buenos Aires 1541-44,—had with the Indians says: "When the enemy saw the horses for the first time a great fear fell upon them, and

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*About 200 mlies from Buenos Aires. Undoubtedly a comment on the prevailing army tests.

†Evolution of the Horse by W. D. Matthew and S. H. Chubb. Am. Mus. Nat. Hist. No. 36 of the Guide Leaflet series—Feb., 1924, p. 12.

A FAMOUS ARABIAN TAN
Figure 19

Pure Arabian Yaquis, Gr. St. (A. S. B. 11) (Dead). Scant 15 hands (1.52 m). A Kehilan-Ajuz, bred by the late J. A. P. Ramsdell, Newburg, N. Y. Owned by Charles E. Perkins, Burlington, Iowa, later by Spencer Borden, Fall River, Mass. (Dam Nejdme No. 1. Sire Garaveen No. 244). Here photographed at the termination of the Morgan Horse Club Endurance Test, Sept. 16-17, 1913. A continuous run of 154 miles. Carrying 160 lbs. he won 3rd prize in 30 hrs., 36 min.

Below: Yaquis in harness.

THE MORGAN TYPE
Figure 20

Ethan Allen III (3987) Dead. (Sire Ethan Allen II, 406) Chestnut. 15 hands (1.52 m). A true Morgan foaled 1885 and owned by Maj. C. A. Benton.

Although the documentary evidence as to the breeding of Justin Morgan, the founder of the breed, is scanty, the type itself, its prepotency, stamina, height and bony structure justify the best authorities in believing that the Morgan is largely of Arabian and Barb blood.* A blood brother of the Criollo though unlike him a product of selective breeding under man's supervision.

From photographs. Reproduced here through the courtesy of Major C. A. Benton.

they fled to the mountains as quickly as they could."[10] (p. 147.)

"————; they (S. American Indians) had a great fear of the horses, and asked the Governor to tell the horses not to be angry with them; and in order to appease them they brought them food."[10] (p. 117).

NOTE 6.—"In our earliest glimpses of the horse it is in the hands of those Aryans who came as nomadic raiders from the high plateaux of Persia (or thereabouts) to the rich settlements in the lowlands of Mesopotamia. From this country, in time, they drove out the first settlers, the Sumarians, probably because of the superiority which the possession of horses gave them. Here they met the Semetic raiders from the south, or Arabia, and in the new country of Mesopotamia both used the horse sometime before 2000 B. C. At this date they were used, as an aid in conquest, to draw Chariots—. By 1500 B. C. the use of the Chariot had spread far and wide from this Mesopotamian centre, to the peoples of India in the East, to Egypt in the South, to *Northern Africa,* and even to the much less cultured peoples of Central and Northern Europe, the Celts."

———"It was the possession of superior horses that made possible the remarkable spread of Mohammedanism by the hard riding, hard fighting armies of his immediate successors. (620-650 A. D.)"[12] (p. 203-4-5 6.)

NOTE 7.————"When the Greeks took possession of North Africa (Cyrene 630 B. C.) they found a superior breed of horses there."

"When Hannibal went on his great expedition (228-221 B. C.) and took route via Spain, around the Mediterranean and down through Italy, he introduced into Spain large numbers of these North African horses. Undoubtedly the evolution of the fine Andalusian stock is due largely to this African strain. When the Spaniards came to America they brought a few of the Norse type with stripes and dun color and many of the Andalusian horses, carrying the Arab——— blood."[17] (Pp. 15-16).

NOTE 8.—The late Spencer Borden in "What Horse for the Cavalry"[5] (p. 42) de-

*"Justin Morgan. The Man and the Horse," by Maj. C. A. Benton.

scribing the Hungarian Lippizans, "next to the pure Arabs—the oldest established breed of horses," quotes the Director-in Chief of all the Austro Hungarian Imperial Studs, thus: "We believe the horses bred in Hungary are the best cavalry mounts in the world. *They are not too large and have a great proportion of Arab blood in them.*"

(P. 46). "The Archduke Charles, third son of Emperor Ferdinand I,—laid the foundation for this stud (Lippiza) on the Karst highlands—as early as 1580 A. D."

"The first material used at Lippiza for breeding were *Spanish horses*—"

(P. 47.) "The register of 1701 notes the arrival of the Spanish horse Cordova."—

"In 1717 other stallions of *Spanish blood* were brought to Lippiza, one from Italy, one from Denmark. In the same year came the stallion Lipp, from the stud of Prince Lippe Borckenburg. His numerous descendants were searched for during a century after that time, they proved so valuable, and were so highly esteemed. It was recognized as a fact that during these early days the *Andalusian* stallions were the best in the world. During the Sixteenth Century every important stud that could procure them made use of these famous horses. These animals were the produce of the native Spanish mares and the Barb (Berber) stallions—closely akin to Arabs—brought to Granada in the time of the Moor Maneys, who ruled not only Granada, but all Andalusia."

NOTE 9.—As further evidence of the value of the Spanish blood the following is quoted:

"Apparently the destruction of the Spanish Armada in 1588 was the ill wind that indirectly benefitted Newmarket so far as its horses were concerned, for there is no doubt that many of the horses rescued from drowning when the great vessels of the Armada were wrecked were sent direct to Newmarket," "where great surprise was expressed by all who beheld them at their exceeding swiftness."

"The horses brought ashore from the Spanish vessels probably were among the best that Spain at that time possessed, and several attempts were made by the Spanish to recover some of them."

"It was not long after this (1658) that the Duke (Buckingham) persuaded his royal pupil (later King Charles II) to import from Spain a number of exceptionally fine sires, for, as he said, Spanish stallions were quite unsurpassed, and in his opinion no other sort of stallion ought to be admitted into this country."

"—about the year 1635—300 and 400 pistoles ($1200....-$1600....) was considered a moderate sum to pay for a well broken young horse."

"—that a Spanish horse called Il Bravo—was held as much as a Mannor of a Thousand Crowns a year, and that he hath known horses at 700, 800, and 1000 pistoles."[24] (Pp. 222-223-227-229.)

NOTE 10.—In a letter to T. C. dated May 26, 1903, the late Randolph Huntington says: "Now you have no doubt seen it often talked by [the]—press, "top crosses"! as this horse or that horse is a good or fashionable "Top cross," [such people] failing to know that all building of any kind must, in order to last for ages, be upon solid foundations,—Unless it be upon a solid foundation, it is a failure. In animal life, the foundation must be pure blood,—In the horse, ages tell us that the Arab and the Barb were [pure bred]—All [pure breds] are pure in one family blood and can be interbred in the closest possible manner in the wild state, or in and under domesticated care. All crosses go to extremes and degenerate; except periodically reinforced from their [original source]—"

"Close breeding is a test for purity of blood. I bred son to mother, daughter to sire, sister to brother, keeping my bloods pure in the one family, and can easily lay a foundation for created fixed types, different in form, character and quality. "Top Crosses" are but fools folly. ——We import thousands of stallions and mares from England and France annually, of created fixed types, which we hasten to cross with our [mixed breeds], which crosses (to break and destroy) our—press term "top crosses—"

NOTE 11.—"During the 17th Century speed was not the sole qualification of a race horse; it was required to have strength and endurance. From racing matured horses at long distances it was an easy transition to shorten the length of the course and increase the speed of the horse, besides which the element of gambling entered into the sport and it soon happened that three year old horses were used in the races. It was found, however that they could not "stay" the old four mile course so that of necessity the distances had to be reduced to accommodate the horses. The result of this policy is seen in modern horse racing in which two year old horses developed for speed alone take part in races less than half a mile in length."[16] (Vol. II p. 473.)

NOTE 12.—"For twenty years the Morgans held their popularity. It was only after Civil War that their decadence began, when the *craze for speed*, started by the wonderful career of Dexter, caused everyone to turn his attention to the long striding trotters, represented by the descendants of Rysdyk's Hambletonian."

"Those were the years when Hambletonian stallions began to be taken to Vermont and bred on Morgan mares, hoping to produce fast trotters. The result was disastrous. Environment was against the violent cross.

The breeders failed to get what they expected and spoiled what they had."

"Not until about 1890 did the supreme folly of the experiment thoroughly impress those who had known the excellence of the original Morgan stock, either from personal experience or the statement of those who had owned and driven them."

"At about that period classes began to be made for "Morgans conforming most nearly to the original type." It was discovered that very few were left, and they were found only in those parts of Vermont, such as Caledonia County, in the neighborhood of St. Johnsbury, where the hills were so steep, and the roads so ill adapted to extreme speed, that none but the old fashioned type, with their short sharp trotting gait, with no sign of straddle behind, no inclination to pace, built low to the ground and substantial in form, could live."[3]

NOTE. 13.—The late Randolph Huntington in a letter to T. C. dated June 2, 1903, referring to the difference between the Arabian and the Barb says "It took me eight years to get the true breeding of Gen. Grant's two horses. [Leopard and Linden Tree, presented to Gen. Grant by the Sultan of Turkey in 1879]. The press of the land called them both pure Arabs, and the General died believing them such; and I also did when I published the book [about them], although the very marked difference in the get of the two horses from virgin mares of same one affinity blood, and inter-bred to it at that, so astonished me, that I knew in my own mind that the two stallions Leopard and Linden Tree were of very different family bloods. Both were gray, and stood the same height (14¾ hands) one was dappled gray, the other blue gray when they arrived."

"The difference between the get by the two horses from the same blooded mares [was so great] that I was astonished; so began a deliberate investigation with opportunities which my gained knowledge and widespread correspondence with the best informed old men in England, France, Russia, India and Harpott, Turkish Armenia gave me. It took eight years, but I got it through a most unheard of manner: The son of the Sultan's private secretary, now and for a long time Assist. Secretary with his father. He had graduated from the Euphrates College with an Armenian, standing second in a class of 84 to the Armenian, which Armenian was then made professor in that college and the two became bosom friends. The Armenian resigned and came to America in 1886. Andrew D. White, then president of Cornell, put me in communication with him, and he became an invited guest at my home—. During the Chicago Worlds Fair, he was private secretary to the Turkish Commission and was presented with the sword of honor by the Sultan."

"Through him and the Sultan's private secretary's son I got the origin of the two horses, Leopard being a pure Seglawi-Jedran (Arab), and Linden Tree a pure Barb—"

NOTE 14.—Dr. Solanet referring to the crossing of many foreign types of horses on the Criollo thereby increasing the height from 1.50 M. (14 h.3") to 1.60 M. (15 h. 3") and otherwise mixing the blood so that one could no longer distinguish a dominant race or know to what type of the various mixed bloods these crosses belonged says: "At this time and for two or three generations of owners of these indefinite products as well as those that did not show any new foreign blood, one did not realize their true origin, and, at times, considered them Criollos and in such belief came to place them in the lineage of the native race, believing them to possess pure blood."

"Therefore, it was necessary to bring forth again pure blooded Criollos; and during the various Buenos Aires expositions it was possible to form a clear idea about the purity of the animals exhibited. And one was able to note then, that from the first moment and constantly the great height was correlative of the examples showing traits of mixed blood, so that the study of the height gave us a valuable differential sign of races."

"A patient and long statistical measurement of height, through many years, from one end to the other of the Republic and neighborhood, and comparing this with a strict study of the proper points of the race, permits us to synthesize the different heights that separate the Criollo from the Argentine 'Mestisos': from 1.37M (13 h. 2") to 1.50M (14 h. 3") is the height of the native; from 1.50M up there is suspicion of mixture; more than 1.55M (15 h. 1") definitely mixed." (Translated from the Spanish "La Alzada del Cabello Criollo" by Emilio Solanet[22] p 8.)

"La Alzada del Caballo Criollo" is a very thorough study of the height of the native Argentine horse.—*T. C.*

NOTE 15A.—W. S. Dixon, quoting Richard Wall, who wrote in 1756, says: "When . . . two mores are nearly of an equal goodness at 9 stone (126 lbs.) for four miles, one of them 14 hands 2 inches (148M) and the other 15 hands 2 inches (1.57M); consequently the lesser must be of a much greater symmetry than the greater." Then Dixon comments: "That is, balance is of more importance than mere height, a fact it is well to bear in mind." ("The Influence of Racing and the Thoroughbred," by William Scarth Dixon. p. 11).

NOTE 15B.—"The weight of Arabians ranges from 800 lbs. to 1000 lbs. (363-453k.)" From "The Horse of the Desert," by W. R. Brown—p. 66.

NOTE 16.—"Herr Ziwza remarked:'It is not possible for big horses to have the perfect proportions we find in the small ones. There is no difference of opinion among the officers of the Austro-Hungarian army in favor of the small ones.' Borden[5] p. 52. Quoting the Chief of the Imperial Spanish Riding School of Vienna.

NOTE 17.—"In a personnal communication Dr. E. W. Nelson of Washington informs me that when domesticated cattle and horses, which always have more or less white or spotted individuals among them, are permitted to revert to a wild state for a long period, they almost always breed back to a general uniformity of color such as characterizes any wild species." Hadwen[9] p. 451.

NOTE 17A.—In his classification of the several original races of horses by coat color, C. H. Smith, writing in 1841, allots his fourth stirps to the dun. He says: "The dun is typical of the generality of the real wild horses, still extant in Asia, and the semi-domesticated, both there and in Eastern Europe." ("Horses," by Charles Hamilton Smith. Naturalists Library, vol. VII, p. 274).

In another place Smith refers to the middle-sized and striped dun as the "indelible type of the dun."

NOTE 18.—"All domesticated breeds of the horse show, at one period or another in life, either directly or through reversion, that they were similarly striped [like the zebra], so the probabilities are that the ancestors of the modern horse were striped animals, and we see in a few transition forms how a striped aninmal can gradually be converted into a non striped animal. In the true Burchell [zebra], inhabiting not a forest region but a sandy open region; the stripes have faded entirely out of the lower limbs; Another Burchell, showing the under spaces of the body assuming a muddy brown tint, which would naturally compare with the bay color of our horses. We observe that this tint harmonizes with the brownish tint of the desert background. In this harmony of color we have the true significance of the origin of the simple bay coloring of our modern horses." Osborn[17] p. 12.

NOTE 18A.—The Greeks and the Romans had numerous dun colored horses.[24 p 67 81] It is a matter of history that Rome possessed nearly the whole of Spain for 600 years, followed by the Goths (700 A. D.) among whom were the Swedes[10],[6] whose horses are dun colored. There are dun colored horses in Arabia (through considered cross-bred[7 p 67]), also among the Berbers[28A P 175–177] so that with the invasion of Spain by the Musulmans the proportional number of dun colored horses was again increased.

After careful study scientists have concluded that the dun coat color in horses is dominant to, at least, bay, black and chestnut.[1 p132]

It is, therefore, easy to understand, that, when the Spanish horse was brought by the Conquerors to South America, the dun color was prevalent and survived in the wild state to become the "classic coat color" of the Criollo.

The reason that the Spanish horse was considered the best horse in Europe for at least two centuries was principally because he was largely of Arabian and Barb lbood. That he possessed a mixture of other lboods is evident in several characteristics, among them the dun coat color, so prevalent in the Criollo, but never found among the pure bred Arabians.[28A P 177]

NOTE 19.—"Watching the habits of mustangs was with me a frequent source of interest. Their breeding season was the early spring months, and then the stallions were in continual combat. Every old stallion would be busy fighting the young stallions, including the yearlings, out of his "manada," and the young stallions would be manouvering to steal a mare or so each; in addition to fighting off these young upstarts the old stallions had to guard against each other. The strongest and the best stallions kept the most mares. Thus, under conditions undisturbed by man, the breed would have a tendency to improve, selective breeding rather than inbreeding being the natural tendency." (Dobie[8] pp. 241-2).

The above applies with equal force to the wild Criollos of the Pampas. Just why this writer opposes selective breeding against inbreeding I do not know. Selective breeding would not preclude inbreeding, either in the domesticated or wild state; in fact if the few superior old stallions kept the most mares inbreeding would be greater than if the mares were distributed equally among all the stallions; besides, there is no stigma on inbreeding where the blood is pure as in the primitive state. The value of this writer's comment that "the breed would have a tendency to improve" is in the "survival of the fittest" stallions and that they kept the most mares.—*T. C.*

NOTE 20.—"I am glad to see your Endurance Test winner is the same as last year. You don't want tall horses you want well balanced horses for long arduous tasks. When I was at Lady Wentworth's I saw a stallion about fourteen hands three inches. He was under fifteen hands—that was a model weight carrier. I told Lady Wentworth that if I had been 25 years younger I should have asked her for the favor of a day's hunting in the Shires on him; saying I thought I should be there or thereabouts on him. Her reply was that if hounds ran hard there would not be many in the same field with him."

From a letter to Maj. C. A. Benton dated Jan. 1, 1926, from William Scarth Dixon

referring to the U. S. Endurance Test of 1925.

NOTE 20A.—Referring to the remarkable agility of the S. American native horse, Springfield,[23] quoting Darwin says: "In Chili a horse is not considered perfectly broken till he can be brought up standing in the midst of his full speed on any particular spot; for instance on a cloak thrown on the ground; or until he will charge a wall, and rearing scrape the surface with his hoofs. I have seen an animal bounding with spirit, yet merely reined by a forefinger and thumb, taken at full gallop across a courtyard, and then made to wheel around the post of a varanda with great speed, but at so equal a distance that the rider with outstretched arm all the while, kept one finger rubbing the post; then making a demivolt in the air, with the other arm outstretched in a like manner, he wheeled around with astonishing force in an opposite direction."

NOTE 21.—"The Criollo pony had his day (see last par.) and when he was used by the Argentine players the game flourished there perhaps more than it does now, but with the first raising of the standard height of ponies to 14.2 hands (1.48M) the small but useful Criollo native was left behind by the introduction of thoroughbred blood, although there are many signs today in Argentine breeding that the little native pony has been often called upon in the development of their present high class polo pony."

"This piebald pony [Tobiana, half-bred] with his power and extreme speed, played by Mr. Hitchcock, has become perhaps the best known to the United States public today."

"The first Argentine bred and Argentine trained polo ponies to attract attention were those brought to England in 1895 by the Buenos Aires team which played with great success that year in London tournaments. Several of the ponies brought over made their mark in first-class polo and Mr. Scott-Robson's Langosta, although a half-bred pony, stood out especially that year and was played in England for many years afterward by the famous Rugby team.'"

"A pure Corillo pony, Orsino, that was brought to England with this team and the pony, Daiman, which later played in England both also attracted the attention of English players and English breeders of the polo pony. The Argentine team that visited England in 1897 was mounted entirely on Argentine ponies and many of these that were left in England later became well known. About the first Argentine pony to attract attention in the United States was the flea-bitten, gray pony, Cinders. This mare was ..... played .....in the international matches at Hurlingham in 1921. Cinders (half-bred) was a mare of great quality, stamina, and hardiness, and since her day the long list of superb Argentine ponies that have come to this country have had a good share in the development of the game here." (Bent[2] pp. 312-18-19-20.)

Mr. Bent describes most interestingly and in great detail, in his chapters on "Breeding the Polo Pony" and "Breeding the Argentine Polo Pony," how for a number of years thoroughbred sires, to give more finish and speed, have been used on pony mares of several breeds but always with a playing record.

That the pure Criollo is still played successfully in the Argentine, and by winning teams, and that the mares are greatly valued and extensively used as dams for the highest type polo ponies, are facts well known and recently brought to my attention by that internationally known Argentine trainer of polo ponies, Mr. Tom Nelson.—*T. C.*

NOTE 22.—Speaking of the regular system of testing in the Hungarian State stock farms which are the source of all their army horses the late Spencer Borden[5] writing in 1912, says:

"On each of the four big Government stud farms there is a regularly equipped race track with stables. Mezohegyes has two, one for running, one for trotting. Babolna and Kisler have one each for running races. Fogaras has one for trotting "Having been trained from October to May, the young mares are all raced, and raced for all they are worth."

"The running races are not sprints; they are all for 3000 meters (1-7/9 miles), and with 60 to 63 kilos (120 to 126 pounds) on the backs of animals racing. Mares that can carry the weight and do one mile and seven furlongs in about 3 minutes 50 seconds are sent to the stud when the racing is over. Those that do not come up to the standard, for any reason, are sent to the Budapest Tattersalls in October and sold to the highest bidder."

"The trotting races at Mezohegyes and Fogaras are equally severe. The mares are raced, not in pneumatic tyred sulkies, but in substantial carts, for 20 kilometers (12½ miles). If they cannot do the trick in an hour they go to the auction sales. If they can trot 12½ miles in about 54 minutes they go into the stud."

"Another feature of the Hungarian system is worthy of note. No animal is allowed to be idle. All are broken to saddle, all mares are broken to harness. If a mare in the stud fails, for any reason, to produce a foal in any given year, she is bred again, and put to work while carrying her foal. If she proves a persistent non-breeder, she is sold at auction." (Pp. 64-65-66.)

NOTE 23.—Among instances of the earliest arrivals of Spanish horses in the Argentine are the following:

"We also brought from Hispania on board

the fourteen ships, seventy-two horses and mares." This was at the time of the founding of Buenos Aires 1535.

In 1540 de Vaca arrived from Spain with 400 men and 30 horses.[10] (Pp. 7, 35.)

Vera y Aragon, early Governor of Buenos Aires, imported cattle and sheep.—"These animals and the horses multiplied."[18] (P. 4.)

"Indeed, the populating of the country with such animals (horses, mules, cattle, sheep and goats) was usually enforced by a clause in the royal concession to the pioneer. This importation, however, was intended to serve as an immediate means of subsistence, rather than as a commencement of a purely pastoral era . As a proof of this, the first horses, cattle and other animals that tasted the grass of the pampa were not introduced directly from Spain.* They filtered through to the Southwest after a lapse of a number of years from Peru by way of Bolivia, neither of these countries, when compared with the rich plain of the Argentine, possessing any pastoral possibilities whatever." (Koebel[11] p. 3.)

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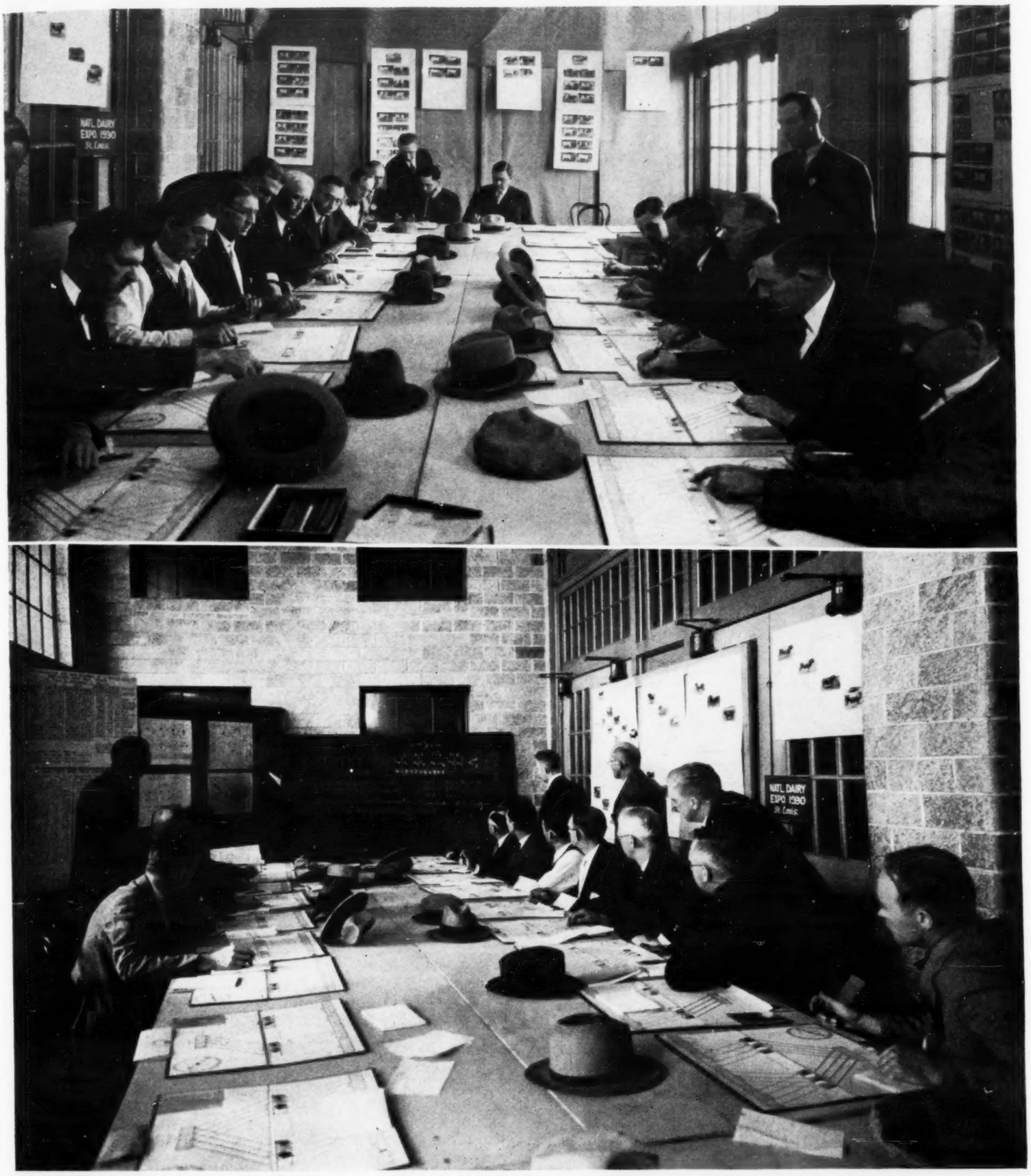
*This statement "not introduced directly from Spain" is not borne out by the records. though probably true of some later arrivals.—*T. C.*



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